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ABSTRACT

This research attempts to evaluate Parkway North Senior High School from the users' viewpoint to find out how successful the building is in meeting the design objectives. The intentions of the project were to (1) determine users' attitudes toward their environment; (2) determine degree of adaptation exerted on the building, both in terms of how far the users are willing to go with the building's flexibility and how far the building is adapting to the users' demands; and (3) determine the extent to which initial design objectives were satisfied and how this affects the building's performance from the users' standpoint. Information was secured from questionnaires completed by 16 members of the school's teaching staff chosen at random, and by 113 randomly chosen students. Information was also secured by the author conducting observations of the classrooms, sketching furniture arrangements and groups in the classrooms, and measuring noise level and ability to hear speakers at various positions. The findings are discussed in the body of the report. Copies of the questionnaires, tabulations, photographs, and excerpts from the architects' design objectives booklet are in the appendixes. (Author/MLF)

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Nahoum Matsas

A User Evaluation Study of Parkway North Senior High School

School of Architecture

Washington University, St. Louis, Missouri

June, 1975

EA 008 817

preface

This study was initiated by the architects of Parkway North Senior High School, the firm of Hoffman, Saur and Associates, as part of my professional studio work with them in the Fall of 1974. Initially, I was to conduct and coordinate the data collection phase while the basic methodology and tools were to be supplied to us. Things did not turn out as expected and I decided to take responsibility for all aspects of the study.

In the course of the year that I was involved with this work, several people provided me with advise, assistance and support. I would like to thank the following individuals in particular for their help at various stages of the project: Eugene Brown, a graduate student in the Master of Urban Design program at Washington University, Tom De Bolt, assistant principal of Parkway North Senior High School, Bill Obrock, then member of the Hoffman, Saur and Associates firm, Dr. Edward Robbins, Assist. Professor of Anthropology, Washington University, Dr. Milton Rubin, from the Parkway School District, and all the teachers and students of Parkway North.

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introduction

The most practiced process of design, in its linear form, stops with the implementation of the design. It gives very little, if any, attention to the "performance" of that product, except for (perhaps) the correction of gross construction errors. The building's success is determined based upon an interpretation of its visual form and layout by other design "experts", while the people who are really familiar with it -- the users -- are not asked to evaluate it. By ignoring the users' opinions, the architects are shutting out an aspect of feedback about the process and the product which could be most useful in learning from one's own work.

On the other hand, the assumption that the design process is linear is seriously questioned today and we are starting to accept that the process does not end with the product, but continues through its use, which both changes the product and leads to the formulation of new objectives and hypotheses, thus restarting the design cycle. In such a cycle, the evaluation of the product becomes an important aspect of the process. There are two basic attitudes towards the measurement of that performance-- one basically concentrating on more or less "objective" data (measurements, descriptions, cost analyses, etc.), while the other's primary targets are the users of the product, their opinions and experiences, and it uses more "soft" methods like surveys and interviews. Both aspects of evaluation can yield useful results and probably should always be integral parts of any performance measurement. It should be understood, though, that there is not such a thing as an objective evaluation, free of values and individual attitudes. If one uses only measurements and hard data, one will find that numbers do not mean much unless they

are interpreted by the particular users of the building and that an expert's observations are no more valid than anyone else's.

One can identify the primary objectives of a post-construction evaluation under three general headings:

A. To determine the degree of satisfaction/dissatisfaction of the users with a building and the difficulties experienced by them in using the facility.

B. To determine the sources of the difficulties whether they are the result of deviations from the program or an inadequacy of the program itself.

C. To make the results available to the individuals and groups interested in the information.

The objectives of this study developed within the above framework, although more emphasis was placed in certain aspects while others were not given as much attention. I refer to this process as a development because there were no clear intentions defined from the beginning and remaining stable. I was introduced to this study by members of the architectural firm that designed Parkway North Senior High School. The building was considered by those architects to be an important product of their office -- a turning point in their approach to educational facility planning -- and it had been highly acclaimed. As a result, they were interested in evaluating the school from the users' viewpoint to find out how successful the building was. This would serve both as a learning experience for the fim and a potential tool in proving the success of their approach. Particular aspects of concern to them in the building's performance were: flexibility (how well did the building adapt to the variety of demands imposed on it by its users?); territoriality (how well did the building accommodate the desire for a wide spectrum of places?); and noise level and control in the open space classrooms.

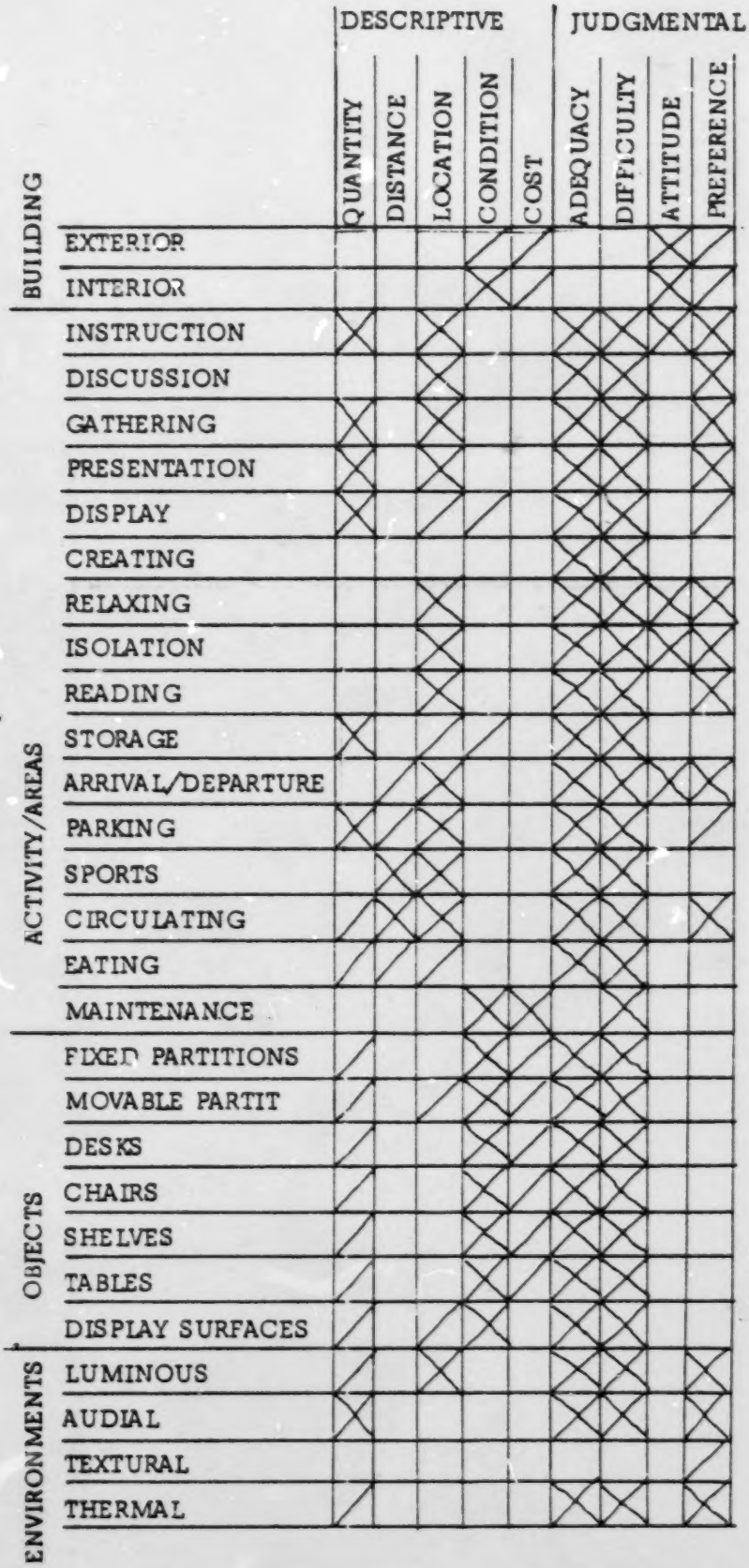
Since I was an outsider to the project -- not having been involved in the planning of the building -- I went through a period of familiarization, during which I had the opportunity to get to know the school, to observe people using it, and to talk to people associated with it in a variety of ways. Out of this period comes the attitude that, since the information obtained through this study should be of use to the school's and to the district's administration, the interests of the users themselves should be incorporated into the study's objectives. These two sources, together with my own expectations from the project, shaped its direction. The following statement, excerpted from an earlier progress report, summarizes the intentions of the project.

What We Want to Know

1. Generally
   a. Determine user's attitudes towards their environment.
   b. Determine degree of adaptation exerted on building, both in terms of how far the users are willing to go with the building's flexibility and how far the building is adapting to the users' demands.
   c. Determine the extent to which initial design objectives were satisfied and how this affects the building's performance from the users' standpoint. (For a listing of some of the planning objectives as expressed in a brochure prepared by the architects, see Appendix D).
2. Specifically --

   For this purpose a checklist matrix was used where the elements of the physical environment were mapped against the types of information which potentially could be gathered (see Fig.1).

   This tool has been adapted from a similar one appearing in a study called "The Physical Facilities of Pennsylvania Day Care Centers," by M. Pyatok, R. Locasso and L. Escovar of the Penn. State University. Information to be gathered is distinguished in two types: descriptive and



Degree of Attention To Be Given:

- ⊠ Most Attention
- ⊠ Some Attention
- ☐ No Attention

FIGURE 1
Aspects of the Building about which Information is to be Gathered

judgmental, while the building is broken down according to the activities that take place in it, the objects that furnish it, and the types of environments in it (audial, luminous, textural and thermal).

METHODOLOGY

The emphasis of the study, as it has been indicated already, was placed upon the users' attitudes towards the building, in the belief that it was their evaluation that would be most valid for any kind of future reference. The choice of which aspects of the environment to focus upon in the survey, although in the end determined by myself, was strongly influenced by my initial interviews with members of the school's staff and student body.

The staff interviews were minimally structured and gave the opportunity to the eight teachers and two administrators interviewed to express their concerns with their environment and indicate the aspects of the building in which they were interested. The student interviews took the form of group discussions -- two of them with a group of about eight students each -- in which I had a series of topics and questions for leading the discussion, but allowed any other commends or directions to form freely. Although these interviews were not intended to be a part of the structured survey instrument, they became a good source of comment and attitude expression and have been used in the formulation of the results.

The survey instrument itself consisted of three major parts:

A. Teacher's Questionnaire (see Appendix A)
This was delivered in the form of a structured personal interview to 16 members of the school's teaching staff chosen at random. This represents a sample of approximately 20% of the school's teaching staff.

B. Student's Questionnaire (see Appendix B)

This was administered to a randomly chosen group of 150 students (out of the school's total of about 1,500) and 113 responses were received.

C. Observation and Measurement Packet

This consisted of:

1. A series of observation sketches of various open classroom arrangements over a period of two days. In these sketches, the arrangements of groups in the room were noted, together with the position of the furniture. Observations were made on noise level and ability to hear speakers at various positions.
2. A series of photographs, as examples of the activities taking place in the building.
3. A listing of observed damages in the building and its furnishings, followed by photographic examples.
4. A series of noise pressure level measurements at various positions of the open classrooms, under a variety of occupancy conditions.

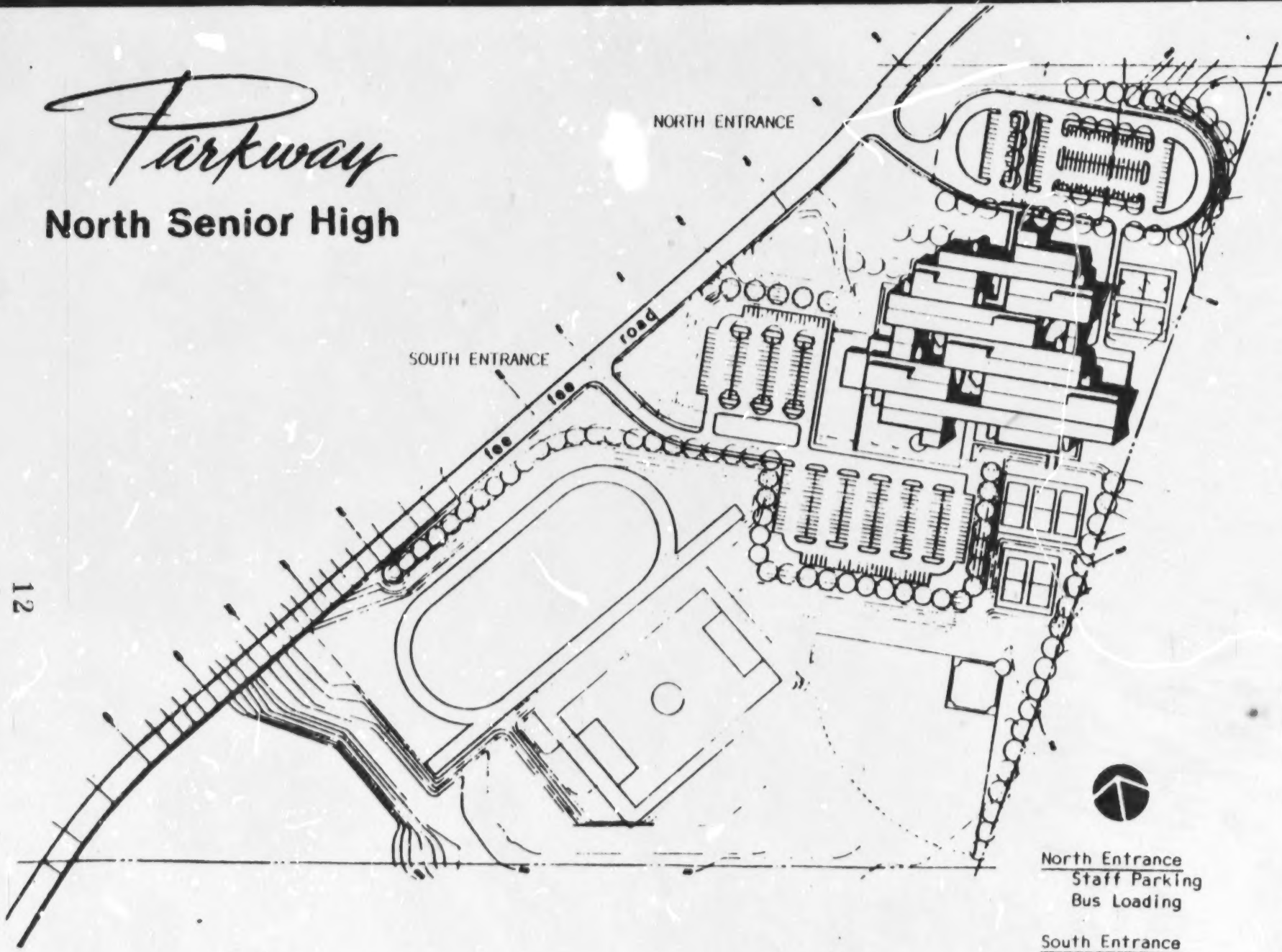
Since I was the only person conducting these observations, this packet was never completely structured and other personal observations made during my various visits in the school were allowed to enter this information gathering phase (such as observations on the performance of H.V.A.C system).

brief description of the building

name	Parkway North Senior High School
location	12860 Fee Fee Road, St. Louis County, Missouri
age	Design began in February 1970. Building occupied since Fall 1972.
cost	$6,829,000. total cost including contingency, furnishings and fees.
configuration	Two storey building, with three entries and one service entry, each connected to one of the four courtyards. Central activities on each floor (cafeteria/commons on lower, library on upper) surrounded by the other activity areas. Most fixed facilities and enclosed spaces on lower floor, while upper floor has the large open classrooms (see floor plans on pages 10,11). Pitched roof allows enough height for loft space on upper floor; ten stairwells connect the two major levels.
site	39 acres of rolling land in a surburban residential area. Extensive earthwork done to provide playing fields and to create berms and terraces around parking and athletic fields.
structural system	Poured-in-place reinforced concrete columns with slabs on grade on the lower floor and poured concrete on dome pans on the upper level floor. Bay sizes are 20' x 30' on the lower level and 20' x 60' on the upper. Concrete bents and gutter beams span the roof bays, while steel joists span between the main beams supporting metal roof deck and suspended acoustic plaster ceiling.
mechanical system	High velocity terminal reheat system and water-cooled condensing system for air-conditioning chillers.
major materials	Exposed concrete columns and beams with exterior panels of exposed aggregate cement plaster on metal lath and steel studs; interiors: acoustic plaster ceilings, vinyl wall covering, while floors are covered with carpet (predominant), vinyl asbestos tile or ceramic tile.
architects & consultants	Hoffman/Saur & Associates: Louis R. Saur, partner in charge of design; Anthony DeMichele, project manager; Pat Spector, interiors; James R. Ahart & Associates, structural and mechanical; Dr. Homer M. Johnson, educational consultant; Lustic & Associates, acoustic and theater consultants; Ford Equipment & Contracting Co., food services consultant.

Parkway

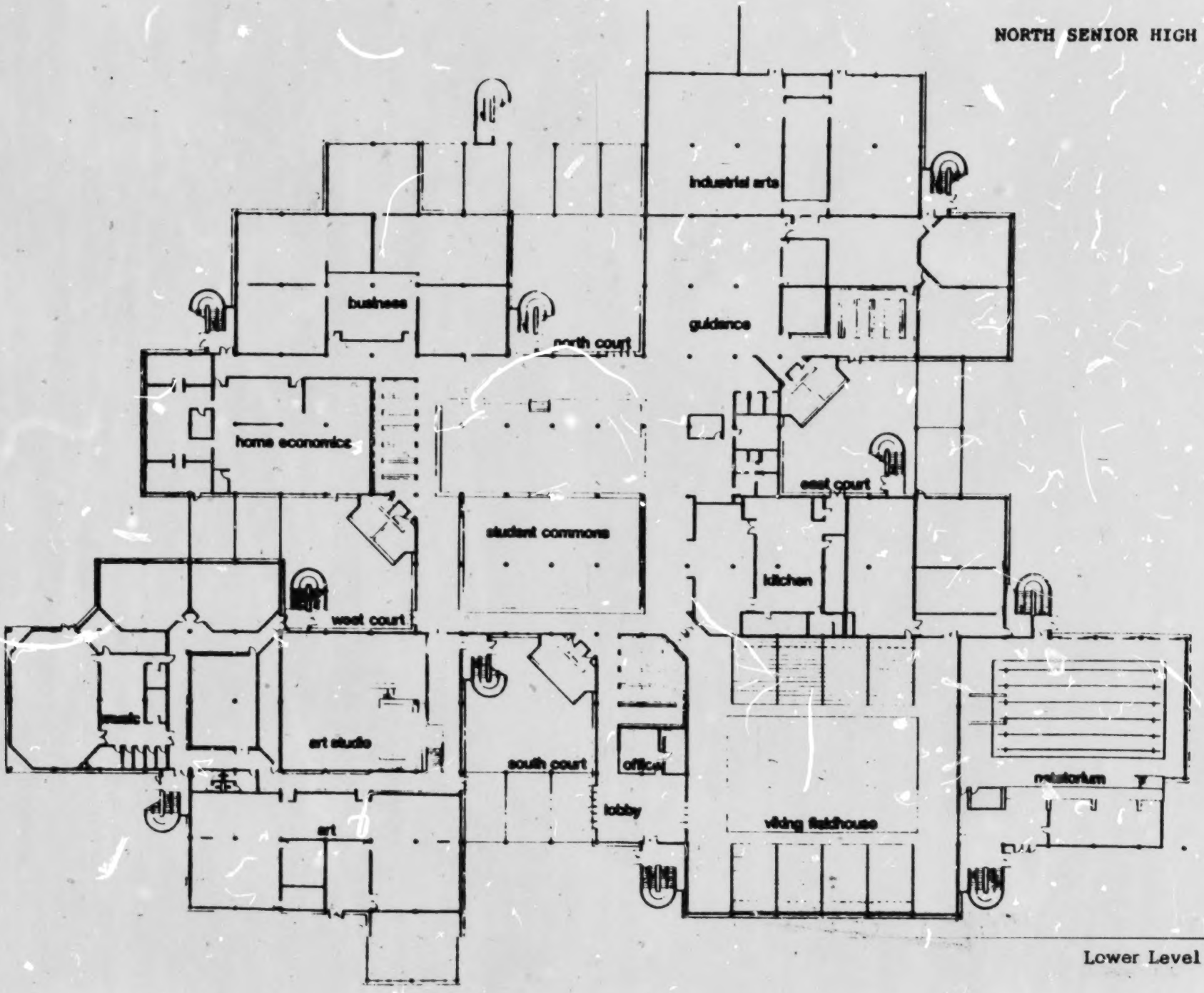
North Senior High



North Entrance
- Staff Parking
- Bus Loading

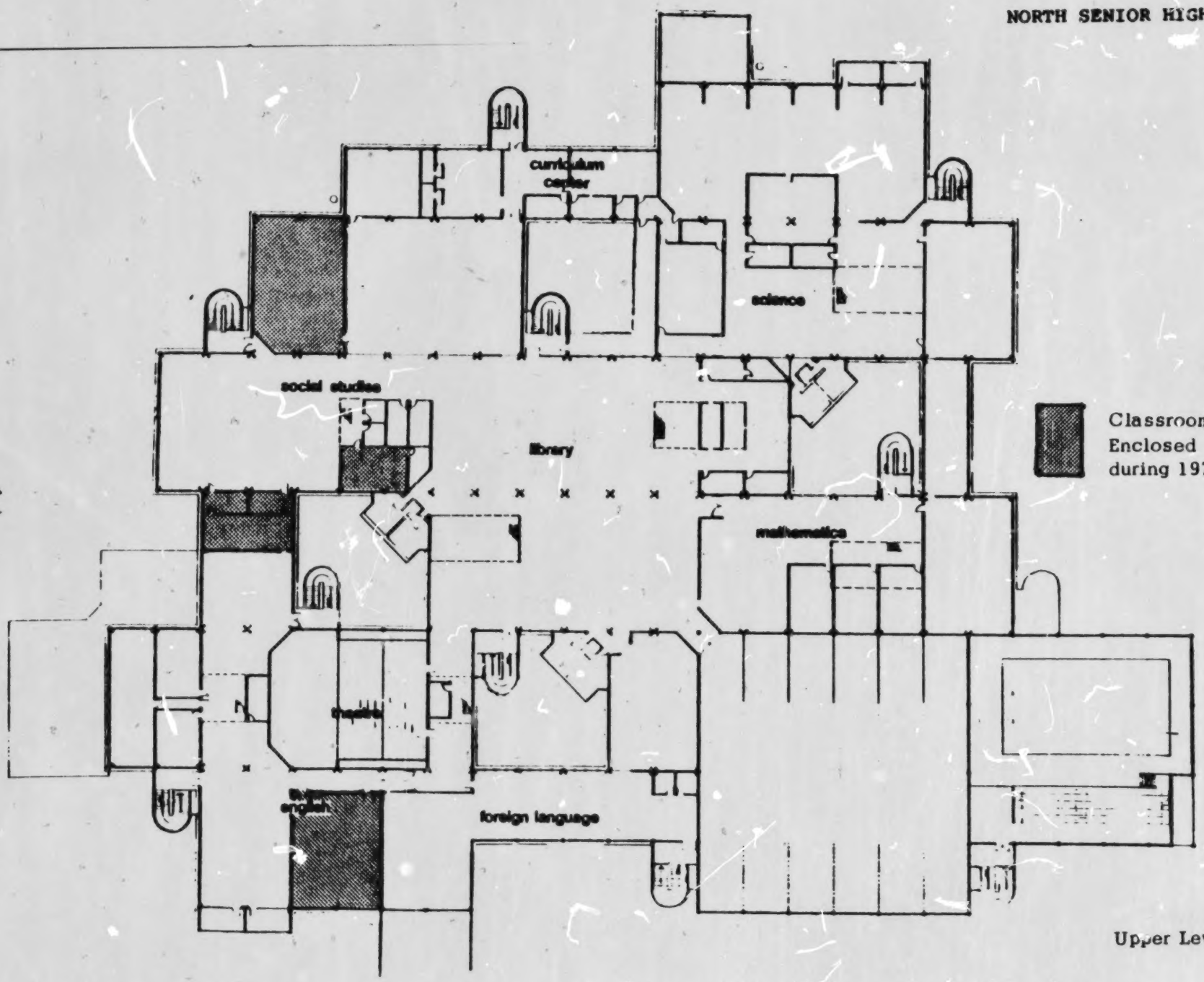
South Entrance
- Office
- Visitors
- Student Parking

NORTH SENIOR HIGH



Lower Level

NORTH SENIOR HIGH



Classrooms Enclosed during 1975

Upper Level

findings of the study

TEACHING SPACES

The term "teaching spaces" is utilized here as a substitute for the term "classrooms", although both seem cumbersome and artificial when they refer to open schools. Teaching and learning spaces go beyond the classroom and, in a sense, include the whole school building. One would argue that they go beyond the school building itself and can (or should) be found in all aspects of human life. For this study's organizational purpose, however, this term has been chosen to describe the more apparent spaces in the school where teaching/learning takes place in a more or less structured way. They include the open and closed classrooms and the discussion has been organized according to certain aspects of the way these spaces function (flexibility, participation, privacy, etc.). On the other hand, discussion about other important aspects of these spaces (furniture, provision for special media etc.) will be found under the specific subject as it concerns the whole building.

flexibility

One of the major potentials of open space is its ability to accept change, adjust to different demands of its users and function in more ways than one. The architects' concerns with this aspect of the building and of the teaching spaces is expressed by the following quote from the design objectives booklet:

> The multifunctioning room is possibly a truer answer to the modern architect's dilemma with flexibility. The room with a generic rather than a specific purpose, and with movable furniture rather than fixed partitions, permits perceptual flexibility rather than physical flexibility and permits toughness and permanence.

Flexibility is a broad and difficult subject to evaluate. It is difficult to distinguish between the real and the perceived, to know whether a specific problem originates from people's inflexibility or the space's inflexibility. In my discussions with the users

of the school, three major physical factors were noted as affecting the flexibility potential of the teaching spaces. One depends on the flexibility of furniture (partitions, tables, chairs, etc.). The second has to do with what I call "the environments" (primarily audial and luminous). The third is related to the capacity of the space to accomodate a certain number of groups and individuals.

Furniture Flexibility: A series of questions were addressed to the teachers in order to find out on the one hand, how often the partitions and furniture get rearranged in the open classrooms and, on the other, what would be the desired frequency of such changes (Teacher's Questionnaire, questions 7 through 12).

As far as the partitions are concerned, the responses were as follows:

present frequency of change	number of responses	desired frequency of change	number of responses
1 time/month	1	2-3 times/week	2
3 times/year	5	1 time/week	1
2 times/year	1	1 time/month	3
1 time/year	4	5 times/year	1
Not Applicable *	5	1 time/year	4
		Not Applicable *	5

* These refer to the teachers who teach in classrooms not furnished with movable partitions (Two from Business, one from Music, one from Driver Education and one from Industrial education.

There seems to be a serious difference between the two answers, since six out of the eleven responding teachers note discrepancies between the existing and the desired frequency of change in the arrangement of partitions. The primary reason expressed was the difficulty in moving these partitions, either because they require a number of people or because they are cumbersome. Also noted was that in moving partitions, other people's space is affected and this this adds to their inflexibility. In my earlier discussions with teachers and students, this problem had been mentioned

frequently with the same reasons cited. Several students reported that they had been involved in moving partitions and had found it to be a difficult job because the partitions were not sturdy and were rather heavy. Two or three respondents also cited laziness and inertia as further reasons for the discrepancy.

The rest of the furniture does not seem to present such problems. It is moved frequently and easily, sometimes as often as six times per day (following every class). There is no significant discrepancy between the present and desired frequency patterns: four of fourteen responding teachers expressed a slight discrepancy between the two (Teach. Quest. #10 & 11). Worth noting is the response of a teacher from the English Department who wanted to see less frequent moving of furniture because of the noise generated during these changes. This had been expressed earlier by another teacher who added that removing tables and chairs from one area results in crowding another area with them. In a question directed to both teachers and students, the furniture was overwhelmingly rated very good or excellent in terms of mobility -- about 90% of both groups' responses (Teach. Quest. #3 d, Student Quest. #8 d).

Another question addressed the issue of whether any lack of furniture flexibility affected the teaching method or caused alteration of a planned activity (Teach. Quest. #5 e). Five of the sixteen responding teachers answered affirmatively, with four of them noting that such effected change of the teaching of their courses was somehow significant. Of these, three taught in open classrooms while the fourth taught Business and referred to the inflexibility of the specialized equipment in that department.

Environmental Flexibility: The success of a multifunctional space in accommodating a wide variety of uses and users depends

partially on the flexibility of the supporting environments -- primarily audial and luminous, and to a lesser extent thermal.

The noise level in the open classrooms is an issue which was raised again and again during my discussions with people at Parkway North Senior, usually as a serious problem area. Great emphasis has been placed on it and it is repeatedly discussed in this study. Early in our discussions, users pointed out to me that lack of auditory privacy seriously limits flexibility of the open spaces. The teachers sample was asked whether they had ever found it necessary to change the way they wanted to teach, or to alter planned activities, either because of noise generated by other groups or because it would generate noise that would disturb others (Teach. Quest. #5 b & 5 c). The answers to both were clearly affirmative (15 of 16 answered yes to the first and 12 of 16 to the second). In assessing the effect such changes had upon the teaching of their courses, about half of these teachers considered it somehow significant: seven and nine, respectively, rated the changes caused by the two factors at three or above on the scale used -- 1 (minimum) to 5 (maximum).

In comparing the answers of the group of teachers working in open classroom departments with those of the group working in more structured classroom spaces (all on the building's lower level), it can be seen that the problem -- as would be expected -- is primarily evident in the multifunctional spaces.

Cumulative answers to questions 5 b & 5 c (Teacher's Questionnaire)

		Upper level sample (n=20)	Lower level (n=1
Most Significant	(5)	15%	-
	(4.5)	10%	-
	(4)	25%	-
	(3)	20%	17%
	(2.5)	5%	-
	(2)	15%	33%
	(1.5%)	5%	-
Not Significant	(1)	0%	17%
Negative Answer		5%	33%

A higher noise and activity level is a known drawback of multi-functional space. What was not expected, however, was that 50% of the teachers would consider the changes they had to make due to it so significant to the teaching of their courses. Several reasons and examples were cited by the teachers in relation to this problem. Since it would be lengthy to include all of them, I am organizing them into the following broad areas:

- Inflexibility of open space to accommodate special activities that generate noise (films, speakers);
- Inflexibility of open space to accommodate several groups engaged in a discussion;
- Specifically, loud teachers and students become a constant nuisance.

Most of the teachers who expressed one or more of the above complaints also felt that the problem could be solved by more or better enclosed classrooms in every department, which could accommodate the special activities and uses that the open space cannot. Since this study began, three enclosed spaces were created in the English and Social Science areas and a semi-enclosed one was totally enclosed in Social Science (see upper level floor plan, page 11). The initial feedback is that this has relieved some of the noise problems expressed above. It should also be noted that several teachers, some among the ones who considered the noise level to be a serious hindrance, qualified their statements by explaining that they are becoming more accustomed to open space and can function better now and with less inhibition.

Lighting fixtures for most of the upper level spaces are carried on a modular grid suspended from the ceiling at about 7-1/2 feet above floor level (the same grid carries the P.A. system speakers and electrical hook-ups). This was arranged with flexibility in mind and to some extent has proven to be a valid concept. Permanent

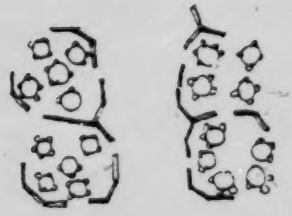
partitions can be erected in the open space without interfering with the lighting system (see photographs Appendix C) as was done recently with the new additions mentioned above. But when teachers were asked to rate the performance of the lighting on the upper level in responding to their demands for adjustment (Teach. Quest. #34 a), half of them considered it poor and only two of the twelve responding rated it above average. The position of the switches (which are located on the grid beyond the reach of an average person) was clearly identified by three respondents as the source of problems. Some teachers had mentioned this problem earlier, while others complained that specific areas in the open classrooms cannot be made dark enough for projection purposes. (The enclosed rooms can be adequately darkened.) Finally, in responding to whether the inflexibility of the lighting system caused any changes in their teaching (Teach. Quest. #5 f), five of sixteen teachers responded affirmatively and only two of them indicated that these changes had some significant effect on the teaching of their courses -- both of these citing the lack of adequate projection spaces as the cause.

Capacity: During the 1974-75 academic year Parkway North Senior did not operate at full capacity. Designed for 2200, it had an enrollment of about 1500. No serious problems have appeared as yet with crowding of its spaces, although there is apprehension that they might when the building reaches full capacity. Already half of the teachers responding to whether they thought the open space in their department was operating at full capacity answered yes. Another three qualified their answer by saying that the space could take more people, but at the sacrifice of flexibility and comfort. This feeling seems to be most strong among teachers in the English Department (five of six people in that department with whom I have conferred consider it to be either crowded or at capacity), with apprehension also being expressed by members in the Math, Art and Business areas.

This discussion on flexibility or on noise levels, the furniture, etc., does not stop here. Further discussion will also be found under other specific topics such as privacy, adequacy of space, and a more general discussion of the open space in the school. Flexibility is a broad issue in a building designed with multifunctional spaces, growth and change in mind. A great deal depends on the flexibility of the users themselves and, as one teacher put it, "Flexibility is in people's willingness to accommodate and modify their program and behavior to others' needs." For example, I have seen -- in a crowded and noisy, by any standards, classroom in Social Sciences -- a group of about 12-15 persons huddled on the floor by a wall, carrying on a discussion for a long time without any apparent disruption. But we will come back to the subject.

privacy

An integral part of the flexibility of a multifunctional space is its ability to provide privacy for individuals or groups when that is desired. In terms of a teaching space, that means adequate visual and auditory protection so that a group can engage in discussion, exchange of information and other activities without being disrupted by other groups' activities, and without feeling the pressure of interfering with others who are operating in the same space. Although these two aspects of privacy can be easily identified (visual and auditory), a third aspect -- that of psychological privacy -- is harder to pinpoint since it is both dependent upon the two factors mentioned and also independent of them.



Visual Privacy: The primary way for providing visual separation in the open space is done by screening with movable partitions, about six feet in height. Almost all groups meeting in the open classrooms utilize spaces defined by these partitions which, although not completely enclosing a certain area, screen it for the most part from adjacent groups. In evaluating the effectiveness

of these partitions to provide visual privacy, more than half of the teachers responding considered that they did their job well (Teach. Quest. #30a). No one rated them as totally ineffective, but a quarter of the respondents judged them below average. Teachers were also asked whether they had found it necessary to change their plans or teaching methods because of lack of visual privacy (Teach. Quest. #5a). Four of sixteen answered yes, with two of them indicating that change to be of some significance. Both of them qualified their answers by explaining that it wasn't a clear lack of visual privacy, but more a combination of other reasons such as perception of interfering activity around the group.

Probably the most serious complaint on the matter was heard from a teacher in the Art Department while referring to the open tier studio immediately off the commons (called the "art pit"). Overlooking that space is a circulation "corridor" which acts as an open viewing gallery. Students on their way from the commons to that southwest wing of the building stop there, and in several cases interfere with the activities going on below. The feeling of working in the "art pit" has been described as similar to being on exhibit ("like monkeys in a zoo") and the administration is considering ways of providing some sort of screening.

Auditory Privacy: Some aspects of this factor have already been discussed under flexibility and discussion will continue to recur, as it did throughout my contact with people at the school. The problem of noise in the open classroom is compounded by the fact that people have been trained to expect teaching/learning environments to be inherently quiet. As it has already been mentioned, almost all responding teachers indicated change of plans and teaching methods due to the lack of auditory privacy and some of them judged those changes as having a significant effect upon the teaching of their courses (Teach. Quest. #5b,c).

In considering a more general aspect of the lack of auditory privacy -- sensing others' activities (movement, noise, etc.) -- and its effect on student participation, the answer was less affirmative overall: nine of the sixteen answered yes (Teach. Quest. #13). If teachers teaching only upstairs are isolated, the affirmative response is increased to 80%. Most of them, however, elaborated by explaining that it was not a constant or significant problem or that it depended on particular classes, particular times (e.g., the end of the hour), or particular events (a lecturer or a film being a distraction, for instance).

In an effort to understand better the magnitude of the problem, teachers were asked to estimate the frequency of need for additional auditory protection of their classes under three different situations: lectures, discussion and individual instruction (Teach. Quest. #31 a,b,c). There was, of course, marked difference between the answers of those who teach upstairs and those who teach downstairs. The table which follows shows two sets of answers to the questions: the first refers to responses of the upstairs teachers (n=10); the second (in parentheses), to downstairs teachers (n=6).

Scale		a) Lectures	b) Discussion	c) Indiv. Inst.
All the time	5	1 (-)	1 (-)	- (-)
	4	- (-)	2 (-)	- (-)
	3.5	2 (-)	- (-)	- (-)
	3	4 (-)	2 (-)	1 (1)
	2	3 (1)	3 (1)	3 (1)
	1.5	- (2)	- (1)	- (1)
Almost never	1	- (3)	2 (4)	6 (3)
		10 (6)	10 (6)	10 (6)

Although it should be noted that these scores refer to each individual's perception of frequency and cannot be accurately compared with each other, the answers to this question strengthen the

indication expressed previously that violation of acoustic privacy does not happen all the time and under all circumstances.

Similar questions were addressed to the students. Student Questionnaire #5 a & b asked how often students felt that their participation in a class activity was hampered because of (a) noise generated by other people and (b) activity and movements of others. Almost 1/3 of the 113 answers were in the high frequency area (a rating of four or above) for question (a) and another 1/5 for question (b). In combining the answers to the two questions, we see that 1/4 of the responding students consider that lack of auditory privacy makes their participation in a class difficult quite frequently. (The adjacent figures show the distribution of answers to the two questions. A rating of 5 represents a frequency of "almost always" and 1 represents "almost never". Half-point scores, such as 4.5, 3.5, etc., have been equally distributed among the two adjacent integral scores for clarity's sake and because they are very few.)

Of all the answers that noted high frequency of such difficulty, a good 2/3 attributed it to the noise and movement in the class environment. The two groups of students with whom I had talked had expressed similar views. The noise was described by some as "overwhelming sometimes", while others elaborated that when excitement is generated in adjacent classes, it tends to distract people from their own activities. The foreign languages area was used as an example of a case where other classes frequently interfere: "You are trying to follow French but you are listening to Spanish." These two student groups also qualified their answers by saying that noise is not "all that much of a problem" and that after some time, most people get used to the higher noise level of the open classrooms. Also pointed out at these discus- was that people can learn to screen out noise when they want to and that noise and other activities distract people from the classes in which they are not interested. This was an opinion shared by

all members of the two groups and some students indicated that the problem became most apparent in classes where instruction by a teacher was the primary method of communication.

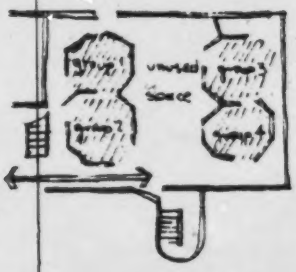
The teachers were also asked to evaluate the various provisions made for auditory privacy. Movable partitions did not fare well by their opinion. Ten out of thirteen teachers rated them as somewhat or totally ineffective and the other three gave them an average mark. A fairly similar opinion was held about the enclosed classrooms that have partitions only about 7-1/2 feet high and not extending up to the ceiling. Of those rooms, one -- in the Social Sciences area -- has already been totally enclosed. On the other hand, the totally enclosed rooms were rated by everybody as effective in providing acoustical privacy. (See Teach. Quest. # 30 b, #32 a & b.)

To accompany the comments of users on auditory privacy, I would like to cite some of the sound pressure level measurements which I took at various points in the open classrooms under a variety of conditions. In most cases these readings were in the range of 60-65 dBA. This varied little with distance from any certain group, since one got closer to another one, and varied very little if one "took protection" behind a movable partition. Variation in "normal loading" circumstances (two or three out of four areas occupied at the same time) was primarily due to the raising of one's voice, general laughter and other such incidents. On the other hand, in the case of a space occupied to capacity (four groups in the Social Science's open classroom closest to the curriculum center), the readings were in the upper 60's range most of the time. Another exception were open spaces occupied by groups involved in quiet activities (e.g., individual instruction or small discussion groups). Such a case was noted in the English Department: although almost all spaces were occupied, the audiometer read levels in the 56-62 dBA range. As an indication of the noise reduction achieved by

the drywall floor-to-ceiling partitions, I will mention that readings in the now totally enclosed room under the social science loft were at 46-48 dBA while in the adjacent open area, the noise pressure level was at an average of about 64 dBA.

adequacy

Certain aspects of this topic have already been discussed under capacity and flexibility of space and, with an idea about the extent of auditory privacy in the open classrooms, the subject could be summarized here. Although the school was not at full enrollment this past year, a substantial number of teachers perceive their spaces as already crowded or at capacity. The problem basically arises from the noise and activity levels in the open space and the need to allow for unused areas that act as buffer zones between groups. The adjacent sketch showing the occupancy arrangement of one of the two social studies open classrooms illustrates this phenomenon. Although, physically, the space could be occupied by six groups, it has provisions for only four, leaving a space in between them that some teachers have described as the "great prairie". Actually I have not seen this particular space occupied by more than three groups at one time, making it probably one of the most comfortable open spaces in which I have been.



Another subject that relates to the above is whether the building provides the appropriate spaces needed by teachers for their various activities. The general question was asked of whether lack of appropriate space has ever caused changes in the teachers' plans or methods (Teach. Quest. #5 d). About 1/3 recalled such a case, but only two teachers considered that change significant to the teaching of their courses.

The accommodation of medium and large sized groups was specifically examined. For the study's purposes, medium groups were defined as those consisting of 2-3 classes combined, while groups of about 100 people were considered large. Teach. Quest. #20 & 21

were aimed at getting an idea of which spaces were used most frequently for such meetings. The theater (auditorium) emerged as the one most frequently used for large meetings (nine of the sixteen teachers ranked it first and another four ranked it second). The commons, the open classrooms and the gym were favored by another six teachers (two for each of these spaces). For medium sized groups, the open classrooms and the theater were used most (six and four, respectively). In evaluating the accommodations provided for such gathers, a large majority of the sample rated them as either excellent or good. No marked difference in these ratings was found between users of one space and another. During my earlier interviews with teachers one person noted high demand for the use of the theater for large group meetings, resulting in difficulty in obtaining its use. I asked the teachers whether there was sufficient space in the building for meetings of large groups and 15 of 16 responded affirmatively (Teach. Quest. No. 16a).

Finally, teachers were asked whether there was sufficient space in their department for the following series of activities: class meetings, individual study, storage and display of resource materials, and blackboard space (Teach. Quest. #17). The majority felt adequate storage space was lacking (10 of 16 responded negatively). Display, blackboard and individual study spaces drew about 1/3 negative responses. Classroom space, on the other hand -- in contrast to the apprehensions expressed about crowding-- was negatively rated by only two of the sixteen respondents.

enclosed classrooms

Providing spaces which will allow sufficient privacy for teaching activities which require it is part of the building's flexibility. Almost every department at Parkway North Senior has access to such enclosed spaces. As can be seen from the floor plans, these rooms range in size from 9' x 20' to 20' x 30'. I found most of the smaller ones were used not as teaching spaces, but for storage or as

places where individual students would go when they wanted privacy and quiet. Two of the smaller rooms have already been eliminated, having been incorporated into the new, bigger enclosed room between the English and Social Science Departments.

The larger rooms, when totally enclosed, provide auditory privacy well. Half the teachers interviewed felt the need for more such spaces in their departments. The expression of need was equally distributed between people teaching upstairs and those teaching in the more structured departments downstairs. It was most acutely felt in the Foreign Languages area which presently has no such enclosed spaces (Teach. Quest. No. 15).

open classrooms in general

This is not intended to be a discussion of the pros and cons of open classroom schools in general, but rather a complement to, and summary of, the preceding discussion of the open teaching spaces at Parkway North Senior. Although people's personal attitudes toward open space in general influence their evaluation of such a space, I do not intend to separate the two. It is obvious to me, from my discussion with people at the school, that everybody teaching at Parkway North Senior is more or less committed to open classroom teaching and, as a result, most teachers have made efforts to overcome some of the difficulties they have encountered.

From the responses on the noise level and its relationship to teaching, one can see that some teachers have already adapted to the auditory environment while others are still trying to adapt. For some this adaptation has been accompanied by significant changes in their teaching methods, sometimes with a sacrifice of their effectiveness as teachers or of the complexity of tasks attempted in the open classroom. Only two of the teachers interviewed expressed a serious dissatisfaction with their teaching in the school. Both

hinted that the potential of open space teaching has not been taken advantage of at Parkway North Senior, one attributing this mostly as the fault of the people in the school while the other attributed it to the design of the physical space.

Although these two opinions comprise only a small minority among the responses encountered, they are significant in that they point to two potential problems of the open school. One has to do with not taking full advantage of the multifunctional and open characteristics of such a space. The other, as expressed by the second of these teachers mentioned above, refers to the possibility that the open space will intimidate certain people's creativity because of its openness. This particular individual's self-perception was as "half the teacher I would be in a closed classroom" and he found that the openness limited his own freedom and creativity as a teacher, primarily due to the fear that others were observing the teachers' performance. While I did not come across any indication that such supervision is actually happening, the point is that the potential exists for serious limitation on the flexibility of the open space.

Another fear expressed by a number of teachers was that the students' participation in their classes was being seriously hampered by the distractions and noise levels present in the open classrooms. I have already discussed aspects of this subject under auditory privacy and would like to complete that discussion here. In examining responses to Student Questionnaire #5, one can see that of the four possible sources of difficulty with student participation, the most prominent in terms of frequency of occurrence are noise and activity generated by other groups. The following table shows the distribution of responses to this question. The first column combines the responses to parts (a) and (b) -- difficulty in participating due to the noise and activity generated by others.

The second column shows the cumulative responses of parts (a) through (d) -- noise and activity of others, inability to see, uncomfortable seating arrangement. Part (e) has been ignored due to the low number of responses. Analytic results can be found in Appendix B .

Student Questionnaire #5
Cumulative Responses: (a) & (b) compared to (a), (b), (c) & (d)

Scale		Parts a & b	Parts a,b,c & d
Almost Always	5	8%	5.5%
	4	18.5%	15%
	3	37%	28%
	2	27.5%	34%
Almost Never	1	9%	17.5%
		100%	100%

What the above numbers do not tell us is the magnitude of the overall problem, or whether the level of student participation in their classes is higher or lower here than in other schools. Such data collection was beyond the scope of this study. What we have instead is some indication of how the students view their participation in class activities. As I already mentioned, both student groups with whom I met agreed that noise is not a problem in the open classroom if a class holds the student's interest and that most individuals have learned to screen out distractions. In the case that a student is bored, then noise or other groups' discussions that can be heard become distractions.

The students also differentiated between what they called "factual" and "communication" classes. In the first category they included math courses and they expressed the opinion that the open classroom sometimes makes it more difficult to pay full attention to such courses, not only because of noise but also by distractions created by the seating arrangement: small groups of students at each table tend to generate their own conversations while a class

is going on. On the other hand, in classes where the major form of communication is through interaction with the other students as well as with the teacher (e.g., history and social sciences, according to the students), the groups felt that the open classroom makes that interaction easier and less formal. The flexibility of the seating arrangment was mentioned as a positive factor in such cases, since it allows for response to variations in communication patterns in the class (the whole group in a circle, smaller groups at tables, special activities, etc.)

One point that both teachers and students felt strongly about was the relationship between the open classrooms and the level of interaction between people. Student pointed out that they felt comfortable and informal in the open space arrangements and that helped them to be open and willing to participate. Teachers attributed students' relaxed attitude and open interaction patterns to the school's relaxed and comfortable atmosphere. Although not necessarily a physical characteristic alone, usually depending as much on people's attitudes, most individuals with whom I talked linked it to the physical conditions of the building. The ability to arrange and use furniture in many different ways, the availability of private spaces which can accommodate a group's informal attitude (as stairwells or a corner of the open classrooms), the colors, the lack of a well-defined structure in the building, the freedom of movement -- these were all reasons mentioned as strongly affecting people's positive attitude toward interaction in the school.

TEACHERS' STATIONS

The teachers of every department of Parkway North Senior have their private working area within the boundaries of the department and rather centrally located in it. The science, mathematics and social science teachers' stations occupy the lofts that exist within those subject matter areas. The others are situated on the same level as the rest of the department, separated by low, movable

movable partitions. (The English teachers occupy one end of an enclosed classroom and in a sense are also separated by walls and a door.) Within these stations the individual has a desk -- resembling a carrel --, some storage space and if the space permits there is a larger table for meetings or a lounging area. There is also a teachers' lounge in the curriculum center that provides some cooking facilities.

Teachers were asked to evaluate the effectiveness of the separation of their teachers' stations in providing the privacy they desired. Half of the 16 respondents considered it effective or very effective; another five rated it as somewhat or totally ineffective (T.Q. No.28). The sample was not well representative of persons occupying loft stations, so no distinction can be drawn from these ratings in terms of the different means of separation; however, from my first series of interviews with teachers I heard basically favorable opinions about the lofts, in terms of providing an adequate privacy barrier as well as being a conveniently located and pleasant space.

Teachers were also asked whether their stations provided them with an adequate amount of space for storage, desk space, meetings and relaxation (Teach. Quest. #29). Of these only the desk space is clearly indicated as sufficient. Two-thirds of the respondents rated the storage space as satisfactory, but only one-half thought the stations were adequate in meeting space or relaxation space (perhaps the teachers' lounge could be considered as compensating for this latter inadequacy).

Another aspect of the teachers' stations is the relationship of their location to the student/teacher interaction. The students were asked which of the three possible locations (lofts, same level, different room) of the teachers' desks they preferred in terms of each in reaching teachers (Stud. Quest. #7). About 60% answered in favor

of stations located on the same level as the classrooms and separated by low partitions only. This obviously corresponds to where teachers are more physically accessible. Since there is no indication of correlation between preference expressed in answer to question #7 and the opinion held about how easy it was in general to find the teachers they wanted to talk with individually (Stud. Quest. #6), this expressed preference is more or less based on physical accessibility and not on students' perceptions of how accessible the teachers are. Other opinions included the feelings of some students that the location of teachers' stations was somewhat inhibiting, especially in the lofts; still others indicated that the location of stations near resource centers was very convenient; and accessibility of teachers was noted as depending on how much the individual wanted to make himself/herself available to students (these opinions emerged during the group discussions prior to the questionnaire).

Finally, in two questions somewhat related to the above, the teachers were asked to indicate where they were sought out most often by students for individual discussion or consultation and also to rate the facilities provided for such meetings in terms of comfort, convenience and privacy (Teach. Quest. #25, 26). The classrooms and the teacher's desk emerged as the spaces most frequently used and 2/3 of the teachers rated the facilities as very good or excellent. A marked difference appeared between respondents who had mentioned their desks as the most frequently used place for student/teacher meetings and those who had mentioned classrooms. Everyone in the first group rated the facilities as good or excellent, but only half of the second group did so.

STUDENTS' SPACES

"Schools cannot afford to lose people. You lose people when they do not have the right places to be."
-- E.F.L. "High School: The Process and the Place"

In an effort to find out whether the physical environment provided individuals in the school with a variety of places to be either alone

or with others, Student Questionnaire #1, 2, 3, 4, 11 & 12 were devised.

To begin with, I wanted on the one hand to obtain a general evaluation of the building in terms of its offering spaces which accommodate a variety of territorial and social requirements and, on the other, to get an identification of these places. Although one could generate a broad spectrum of territorial and social situations to be evaluated, I concentrated on five which I considered to be basic (Stud. Quest. #1 a,b,c,d, & e). The first two are basically "single person" situations, but I differentiated between places for being alone and places for studying because I do not think the user has the same requirements from both spaces. This was reinforced by the students indicating different attitudes in evaluating them: while a good 33% rated the building as poor or below average in providing places where one can be alone, only 7% of the sample thought the same in terms of places where one can study. This difference is understandable since a place to be alone requires more than a relative degree of visual and auditory privacy. Also, the low rating the building received in terms of providing places to be alone (66% of the respondents considered in average or below) is explainable to a degree by the fact that it is a public building; however, not many would find this acceptable since it is a building in which there has been the attempt to eliminate institutional space.

In identifying spaces most preferred for being alone, students pointed to the library (30% ranked it first), the courtyards (24%) and the lofts (20%). With regard to study, the library was clearly indicated as the first preference (more than half chose it), then the lofts (17%) and the classrooms (10%) (Stud. Quest. No. 2 & 3).

The students with whom I met in earlier discussions gave a more favorable opinion of the building with regard to being alone than the questionnaire sample. They were definitely affirmative when asked

whether an individual could find spaces within the building for privacy and pointed to the lofts, the stairwells and the library as such places.

In rather sharp contrast to the privacy issue, the building does exceptionally well in terms of the availability of social spaces. About 90% of the students considered it good or excellent at providing places where people can gather or where one can talk with others. I would like to emphasize the high number of people who rated the building excellent in these two questions: (St. Q.1c,d) around 66% of the total sample. Clearly expressed as the preferred place for socializing was the commons (Stud. Quest. #4) -- almost 70% expressed that preference-- while other spaces mentioned often were the library (14%) and the courtyards (7%).

Another variation of the above uses, which could be interpreted as indicating either or both the desire to be alone and the desire to be with others, is the need for places to relax and pass time. Students evaluated the building as quite good in this respect, with 85% rating it as good or excellent (Stud. Quest. #1 e).

Finally, students were asked whether they felt there were places they could call there own, and to identify them (Stud. Quest. #11, 12). Only 30% answered yes, and one-quarter of those mentioned the stairwells as the place they consider their own (other places mentioned frequently were: area in front or around lockers, various lofts, the commons and the library). I tested for any correlation between affirmative answers in this question and the ratings given in question 1, (a)through (e). The only noticeable one occurred with the rating of the building in terms of places to be alone: among persons who "possessed" a place of their own in the building, about 50% gave a rating of good or excellent to 1(a) instead of the 37% for the total sample, and only 20% gave it a rating of below average as compared to about 33% of the total.

OVERALL ORGANIZATION OF THE BUILDING

The architects' organizational concept for the building is characterized by the existence of clearly defined subject matter areas or departments and the desire to maximize the ability of these areas to relate to each other. This attitude is reflected in the grouping of the various departments into three broad categories: humanities, vocational and science, plus the physical education facilities.

The vocational departments are all placed together in the north section of the lower level; the Science and Math Departments are adjacently located upstairs and are connected by a "bridge" classroom. Of the humanities areas, the Music and Art Departments are on the lower level underneath the English Department (which is connected with the foreign languages and social sciences adjacent to it) and are linked to it by two staircases. The library (or IMC) and the commons are the central spaces on each level and are intended to be the "mixing spine" of the school.

I asked the teachers to judge the building configuration in terms of facilitating their communication with other departments, as well as with the school's shared, or central, facilities (Teach. Quest. #23 & 24). As far as the first aspect of the building's organization is concerned, the teachers' opinions were split down the middle. Five of the sixteen respondents judged it as most accommodating while another five gave it the lowest rating. Unfavorable comments were expressed by three teachers in the English Department who considered their area to be isolated, one of them specifying that facilities needed -- e.g., graphics department and darkroom -- were too far away, and by teachers of Music, Driver's Education and Business. Two other English teachers sharply contradicted the above opinion, and favorable comments were heard about the link between the Math and Science Departments.

Regarding the second aspect (accommodating communication with the school's shared facilities), the majority of teachers (14 of 16)

rated the building positively. The centrality of the library, the easy flowing of the subject matter areas into it, the position of resource centers and the upstairs-downstairs links were all reasons cited in this context.

circulation

There are very few corridors as such in this building and people are free to travel through or adjacent to the open spaces. Eleven stairwells connect the two levels and, according to my observations, two of them (the north and south court ones) are the most heavily used because of their adjacency to the central spaces. I asked students how easy they thought it was to get from one place to another in the building and 86% passed a judgment of "easy" or "extremely easy" (Stud. Quest. #9). A similar opinion had been expressed by the two groups of students I interviewed, being that after you get to know the shortcuts "you can get anywhere in one minute flat, except maybe to and from the gym." (I should mention here that some of the physical education facilities are located in a third -- underground-- level.) Also, very favorable opinions were expressed with regard to the feeling of moving around in the school. The experience was described as comfortable, free, open and "non-claustrophobic".

Another aspect of the free patterns of circulation through the school is whether they interfere with ongoing activities. Some of the discussion on auditory privacy would apply to this subject; still, when teachers were specifically asked to calculate the frequency of occurrence of disturbance caused by the circulation of people, very few registered complaints. 12 of the 16 teachers noted that such disturbance occurred almost never and the other four placed it at about the "sometimes" mark (Teach. Quest. #14). A similar question was asked to one of the librarians, who noted that the circulation of people through the library did not seem to bother anybody.

THE SCHOOL'S CENTERS

Beyond a doubt, the architects' intention of making the commons and the library the center of the school has been realized. There was some argument between the students I interviewed as to which one is the "real center" of the building. Some compromised by saying that the commons was the center during the beginning and end of the day while the library held that position during the school hours because of its proximity and special relationships with the various departments. From these discussions, the difference of use of the two spaces emerged and so I will present them separately.

commons

The Student Commons is above all what its name implies. More than 2/3 of the students questioned ranked it as their first choice among the building's gathering places. During lunch hour it is also the school cafeteria and the large open space with furniture in small units can be transformed easily. Some students also like it as a place to study, to sit around and watch others or to play. It is considered comfortable, informal and, although not exactly quiet, the students told me that noisy groups try to stay away from the people who are studying.

library

The architects wanted that the library, or Instructional Media Center, serve as "a place for individual research, assigned taskes, resource seeking, teacher consultation, small groups and serendipity." It seems to be all this and more and is one of the most used places in the building. According to one of the librarians, its central position and the fact that it is on most people's paths through the building, expose the library to everyone. It does not have the image in students' minds of a closed, quiet, far-off place in the school which they only go to because they are sent.

In addition to bei ng the place most preferred for study, it is a place where people go to relax or even to meet other people. One student told me, "Although the library is not supposed to be a social place,

you can always meet people there since all the classes are around it." For most people this does not cause big problems. It was mentioned that, although the place is noisy, those who want to talk tend to concentrate in certain areas such as the magazines lounge. A few did think there was a problem and suggested there be two separate spaces -- one where people could study and another for relaxing, listening to records, talking or reading a magazine. The two lofts in the library area seem to serve the purpose of quiet places.

As the library is now, it is totally open, without any real entries or exits, control points or barriers. Although it is very vulnerable to theft or vandalism, the lost-book rate, I was told, is rather low. This can probably be explained by the high respect which the students have for their school (still the administration is apprehensive of future change for the worse, since it would require great effort to enclose the library).

counseling center

Although not one of the school's centers, the guidance area has been placed in such a way as to benefit from the commons: adjacent and open to it. This area consists primarily of an open space where one can find the counselors situated or find guide and reference books. Several small rooms to the side of this space serve as private counseling areas. Students were asked whether they felt that the arrangement and facilities of the guidance area provided them with the privacy they desired (Stud. Quest. #10). Three-quarters of the sample answered affirmatively, which corresponds fairly accurately with what I heard during interviews with students. The ones who did not like the present arrangement said that they would prefer the counselors to have enclosed, private offices, the reason being: "(with the present arrangement) when you go to a private room, then everybody knows it's something private."

FURNITURE

All the furniture in the building has been designed by Herman Miller and the furnishings contractor was supposed to return and evaluate its performance. I would have liked to include such findings in this study, but that evaluation has not been done yet.

I asked the users (both teachers and students) to rate the furniture on the basis of four different criteria: appearance, comfort and convenience, durability and upkeep, and mobility or ease of moving it around (Teach. Quest. #38, Stud. Quest. #8). Except for durability, the furniture received very high marks from both groups with around 90% rating it excellent or good. The mobility aspect has already been discussed under "flexibility" and I will mention again that the movable partitions did not share the high rating of the rest of the furniture. In terms of durability, about half the teachers and 40% of the students rated the furniture as average or below average. Almost all the complaints the teachers registered in Teach. Quest. #39 had to do with the poor quality of its construction and its inability to sustain rough treatment. The chairs tend to break or to come apart at the joints between the seat and legs and the partitions' support legs tend to break off (I noticed several of these legs scattered about and the screw which connects them to the panel broken). The school has replaced the broken chairs with a different type which were judged by most people as more durable, but less comfortable, than the old ones.

THERMAL ENVIRONMENT

The H.V.A.C. system seems to be one of the building's weak points. Almost every person with whom I talked had something negattve to say about it. This is reflected in the results to a question which asked teachers to rate the performace of the system in providing a comfortable level of temperature (Teach. Quest. #37). Only one individual rated it above average while 50% of the sample judged it poor.

Of course, one is not to expect everyone to agree on what is a

comfortable temperature level. The complaints, however, center around uneven distribution of temperatures throughout the building and the existence of strong drafts. People also complained about their inability to use the thermostats in the enclosed rooms unless they are taken apart. Although I did not make any temperature measurements, I witnessed the difference in temperatures between various spaces, especially the enclosed ones, and many times I had to sit right in a draft. I talked about this with two people responsible for the maintenance of the building and they did not think the problem was so serious. They mentioned that the system needs some adjustments with seasonal changes and during unstable weather. Nor did they see any zoning problems.

Finally, the building has nc operable windows. This feature was considered a drawback by most students and teachers I interviewed, especially when the heating and air conditioning breaks down, although there was no indication of this happening often.

LIGHTING

It has already been mentioned under the discussion on environmental flexibility that the building's users have encountered problems with adjusting and controlling the lighting levels, especially in open classrooms. Teachers were also asked to evaluate the amount of light provided in various parts of the building. No problems arose in this respect and almost all respondents judged the amount of light provided to be adequate (Teach. Quest. # 33). The only departure from this opinion was indicated in relation to the amount of light in enclosed classrooms, with four out of fourteen respondents noting levels on the dim side.

Another aspect examined was natural light and the users' ability to control it. At Parkway North Senior, the screening of natural light is achieved via vertical venetian blinds made out of metal. The ease with which these blinds break, bend, or get out of their tracks was the primary reason for the high number of people regis-

tering complaint about the screening of natural light. More than half of the teachers (9/16) rated such provisions as below average (Teach. Quest. #35).

SPECIAL MEDIA OF INSTRUCTION

The term "special media" within the context of this study is used to denote primarily the use of audio-visual equipment in instruction. During the interviews, several teachers complained of inadequate provision for the use of electronic equipment in the open classrooms, specifying an insufficient number of, or inconvenient location of, plugs. In the questionnaire, teachers were asked to rate the adequacy of facilities provided for the use of special media in general. Ten respondents thought the facilities were adequate, the other six considered them to be less than adequate (Teach. Quest. # 36). Three of the six were from the English Department, two from Business (where instruction relies heavily on the use of electric equipment) and one from Social Studies.

MAINTENANCE & UPKEEP

In an interview with two people primarily concerned with the building's maintenance and administration, we talked about how well the building is holding up and how easy it is to take care of. What basically emerged from that discussion was that Parkway North Senior is a "sophisticated building to take care of" and that it is a structure with no major problems except the leaking roof -- although it does take time to get used to it and organize it. The leaking roof is a noticeable problem if one happens to be on the upper floor during a heavy rain. On one such occasion I spotted about thirty different leaks, some of them rather heavy. Most occur along the roof beam joints or along the clerestory window seams

Other problems noted were fragility of furniture, some damage which has occurred to the dry walls and the difficulty of finding original wall colors at most suppliers. The carpeted floor was considered easy to clean--except for areas in the Art and Science Departments--but there have been problems with the carpet shrinking when shampoc

Plastic coated walls were preferred to plaster ones in terms of cleaning ease and damage resistance. Similar comments were obtained from the teachers on the subject of maintenance. Most of them (12/16) rated the building good or excellent in terms of ease of maintenance and upkeep. The leaking roof was, again, the major complaint and cause of inconvenience. (Teach.Quest.#40,4

OVERVIEW

It is not my intention to try to reach a general conclusion in this final section of the study. Instead, I will summarize the users' overall opinion of the building as expressed either through the questionnaires or during the interviews I had with them.

The one thing most agreed upon by Parkway North Senior's occupants was that their building has provided an informal and relaxed atmosphere while at the same time being an exciting environment. I have heard such opinions from the very beginning of my contact with the school's users. Even the teachers who did not want to be overly enthusiastic themselves would point out that it was a very pleasant building for the students, and they attributed a large part of the students' open and relaxed attitude to the facility's atmosphere.

Students were specifically asked to describe their feelings on how exciting and how informal the building was by using a rating scale (Stud. Quest. #13, 14). About 2/3 of the sample rated the building high in both respects (4 or above on the scale of 1 to 5). When these results are coupled with comments obtained during earlier interviews, the positive judgment is intensified. People described the building as "friendly" and "homey", expressing their pride in it and some even considering a place of their own. Although they were careful to qualify that it is an exciting building only within the context of school environments, they are ready to show it off to their friends as a "neat place to go to school."

It is interesting to note that while the interior of the building was praised, its exterior appearance drew only negative comments from almost all of the students with whom I talked (they thought it looked like a prison). The question of appearance was not included on the questionnaires, but three teacher respondents did comment on it-- two to call it "prison-like" and one to remark favorably.

In order to get to the teachers' general attitudes about the building, I tried to cover four different points in the questionnaire. Two of them had to do with their perception of the effect the physical environment has had upon their teaching methods and the interaction among people in general (Teach . Quest. #43,44). The majority of the teachers (13/16) thought that the building had a positive effect on both behaviors, but there was a difference in their enthusiasm. About eight of them were more clearly affirmative than the others. (I should note here that this patterm was exactly the same for both questions, with the same people expressing the same attitudes on both subjects.) The openness of space and informality of atmosphere were the most cited reasons for the positive effect.

Teachers were also asked to choose from a list of statements the one(s) which described their general attitude about the physical environment of the school (Teach. Quest. #42). Every person thought the building was exciting and 12 out of 14 thought that statement <u>best</u> described their attitude.

Finally, most of the teachers expressed a strong preference for teaching in Parkway North Senior versus any other school; some of them, however, qualified this as being a statement not so much of satisfaction with the building as of satisfaction with the administration and the people in the school.

In concluding this study, I would like to quote the following statement from a teacher, which I think best expresses the overall attitude of the majority of the building's users:

> Any minor discomforts or inconveniences are more than offset by (the) positive qualities of the building.... I find the building to be very attractive and stimulating, even after two years here. And the students like it too.

appendix A

Teacher's Questionnaire and Results

PARKWAY NORTH SENIOR USER EVALUATION STUDY

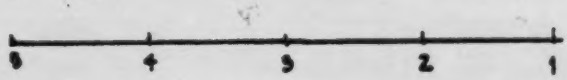
TEACHER'S QUESTIONNAIRE

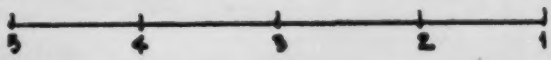
Teacher's Department _____

1. What subject do you teach?
2. How long have you taught at Parkway North Senior?
3. How long have you taught in general?
4. Did you teach in an "open plan" school before coming to Parkway North?

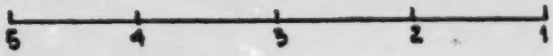
5. Have you ever found it necessary to change the way you want to teach, or in any other way alter a planned activity because of one of the following reasons:

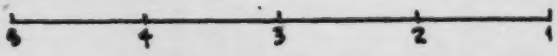
Most Significant — Not Significant at all

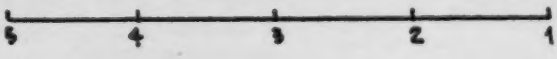
(a) ____ lack of visual privacy 

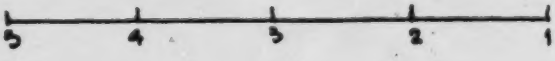
(b) ____ noise generated by other groups 

(c) ____ it would generate noise that would bother other groups

(d) ____ there was not appropriate space available 

(e) ____ the furniture was not flexible 

(f) ____ the lighting could not be controlled 

(g) ____ other reason (please specify) 

If the answer to any of the above has been yes, please rate the effect that changes caused by the above factors had upon the teaching of your course or courses. (Use rating scale next to each factor above.)

6. Please cite any examples of such changes and describe briefly their effect on your teaching, if you think it might clarify your answer to the above question.

7. Based on your experience, how often do the partitions get rearranged in the open classrooms?

All the time — Almost never (once a year)

5 4 3 2 1

_____ times per _____.

8. Ideally, how often would you like to see the partitions rearranged in the open classrooms?

All the time — Almost never (once a year)

5 4 3 2 1

_____ times per _____.

9. How would you explain any discrepancies between the two answers above?

10. How often does the furniture get rearranged in the open classrooms?

All the time — Almost never (once a year)

5 4 3 2 1

_____ times per _____.

11. Ideally, how often would you like to see the furniture rearranged in the open classrooms?

All the time — Almost never (once a year)

5 4 3 2 1

_____ times per _____.

12. How would you explain any discrepancies between the two answers above?

13. Do you find that activity generated by other classes (like noise, movement, etc.) affects the level of participation of students in your class? Yes _____ No _____

Please elaborate briefly on your answer:

14. How often do you find that the circulation of people through the building disturbs you or your group in an activity in which you are involved?

All the time — Almost never

15. Do you feel the need for more or fewer enclosed classrooms in your department?

____ More

____ Fewer

____ the Same as Now

16. Do you find that there is sufficient space in the building or on the site for each of the following activities:

	YES	NO
Meetings of large groups (like 100 people)	____	____
Circulation of people	____	____
Display of objects or signs	____	____
Parking	____	____

17. Do you find that there is sufficient space in your own department for each of the following activities?

	YES	NO
Class meetings	____	____
Individual study	____	____
Storage (books/resources/materials)	____	____
Display of resource materials (books/references)	____	____
Blackboard space	____	____

18. Do you find that the open classroom space in your department is being used at full capacity level?

YES _____ NO _____

19. If not, what do you think are the reasons for it? (Ex: we are not operating at capacity, if we put more people in it would be too noisy, etc.)

20. Which spaces do you use most often for gatherings of medium-sized groups (2 or 3 classes combined)? Please rank them in order of frequency of use.

____ the library

____ the auditorium

____ the open classrooms

____ the commons

____ the enclosed classrooms

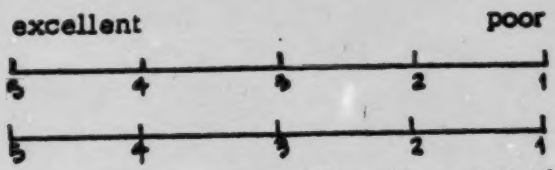
____ other (specify: _____)

21. Which spaces do you use most often for gatherings of large groups (100 people)? Please rank them in order of frequency of use.

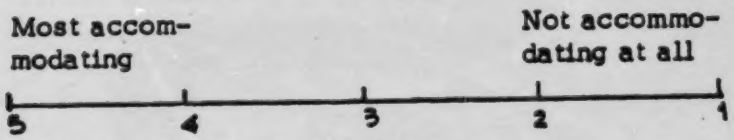
_____ library
_____ auditorium
_____ the open classrooms
_____ commons
_____ other (specify:

22. Please rate the accommodations provided for gatherings of:

(a) medium sized groups
(b) large groups

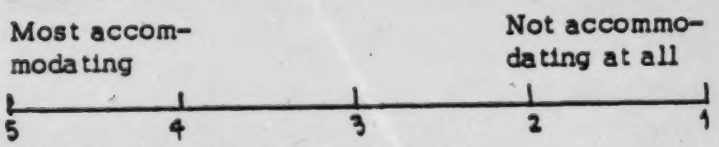


23. How well do you think that the building configuration and the placement of your department accommodate the communication with other departments when desired?



Please elaborate on your answer:

24. How well do you think that the building configuration and the placement of your department accommodate the communication with the school's shared facilities (library, commons, auditorium, etc.)?

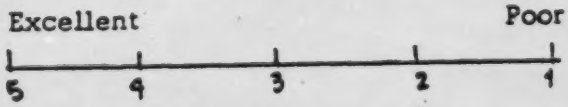


Please elaborate on your answer:

25. Where do students most often seek you out for individual discussion or consultation? Please rank the following spaces in order of frequency of use.

_____ at your own desk
_____ at the teachers' lounge
_____ in the classroom
_____ in the commons
_____ in the library
_____ elsewhere (specify:

26. Please rate the facilities provided for individual meetings between students and teachers (in terms of convenience, comfort and privacy)



27. How is your private working space separated from the surrounding environment?

_____ by walls and doors/ _____ by movable partitions/ _____ by a level change

28. Please rate the effectiveness of that separation in providing the privacy (visual, acoustical and psychological) that you desire:

Very effective — Not effective at all

5 4 3 2 1

29. Is there sufficient space available in your "teacher's station" for the following:

	YES	NO
storage of personal articles	_____	_____
desk space	_____	_____
meeting space	_____	_____
relaxation	_____	_____

30. Please rate the effectiveness of the movable partitions in open classrooms to provi

Very effective — Not effec tive at al

(a) Visual privacy

5 4 3 2 1

(b) Acoustical privacy

5 4 3 2 1

31. How often do you find that you need additional protection of your class group from "outside" noise in

All the time — Almost never

(a) lecturing situations

5 4 3 2 1

(b) discussion situations

5 4 3 2 1

(c) individual instruction situations

5 4 3 2 1

32. Please rate the effectiveness of the two types of enclosed classrooms in providing acoustical privacy when necessary:

Very effective — Not effec- tive at all

(a) rooms with walls that don't go all the way up to the ceiling

5 4 3 2 1

(b) totally enclosed rooms

5 4 3 2 1

33. Please rate the amount of light provided in the following spaces (omit those spaces with which you are not familiar).

Too bright — Adequate — Too d

open classrooms

5 4 3 2 1

enclosed classrooms

5 4 3 2 1

teachers' stations

5 4 3 2 1

teachers' lounge

5 4 3 2 1

library

5 4 3 2 1

art studios

5 4 3 2 1

music studios

5 4 3 2 1

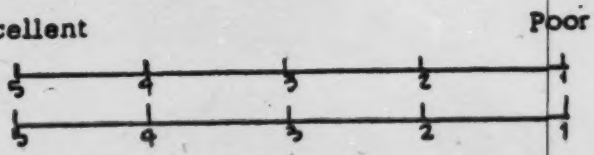
auditorium

5 4 3 2 1

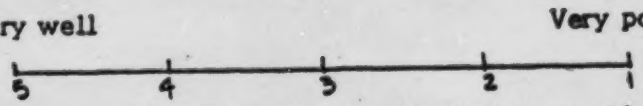
34. How well do you think the lighting system responds to your demands for adjusting lighting level?

(a) on the upper floor

(b) on the lower floor



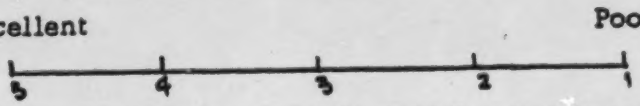
35. How well can you screen out natural light when you want to?



36. Please rate the adequacy of the facilities provided in your department for the use of special media of instruction:

_____ more than we need/ _____ adequate/ _____ less than we need

37. Please rate the performance of the heating/air conditioning system in providing a comfortable level of temperature:



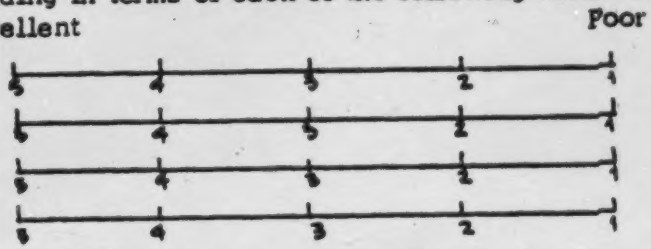
38. Please rate the furniture in the building in terms of each of the following criteria:

(a) appearance

(b) comfort and convenience

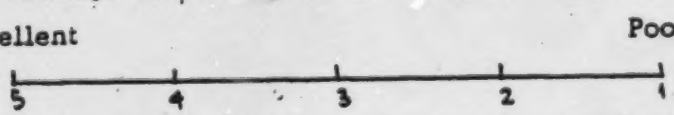
(c) durability and upkeep

(d) mobility



39. Please indicate briefly any specific problems with the furniture that have come to your attention:

40. Please indicate your feelings concerning the ease of maintenance and upkeep of the building:



41. Please indicate briefly any specific problems of maintenance and upkeep that have come to your attention:

42. Which of the following statements would best describe your general attitude towards the physical environment of this school. (In case more than one statement applies, please note the one that applies best.)

____ This is a very exciting building.
____ This is a pleasant building.
____ This is an unpleasant building.
____ This is an ugly building.
____ This building is very institutional.
____ This building is very different from any other school building I've seen.
____ I'm indifferent towards the physical environment of this building.
____ Other (please specify:
____ No opinion.

43. How would you describe your attitudes about the relationship between the physical configuration of the school and the teaching methods employed here? (Ex: The building has facilitated the use of the teaching methods employed here.)

44. How would you describe your attitudes about the relationship between the physical configuration of the school and the patterns of interaction between people here? (Ex: The building has had no noticeable effect on the interaction patterns.)

45. How would you describe your attitudes about teaching in this particular school versus any other school or any other "open plan" school? (Ex: I don't care whether I teach here or in any other open plan school.)

46. Is there anything else you would like to say about this building and your use of it that has been covered by this questionnaire or that might clarify your answers?

6. (comments to previous question):

- Need for special activity spaces and more enclosed spaces
- Disruption caused when having to move to another area
- Need for better blackboards, lighting, more flexible dividers and openable windows
- Full creativity intimidated because of exposure
- Lack of light control, need for projection space
- If two groups have discussions at same time it becomes too much
- Have outgrown space, equipment in the way (business department)
- Have grown used to noise
- But placement of department, lack of darkroom (journalism)
- Overcrowded, films and speakers disturb
- No change in plans but in the effectiveness (two respondents)

7.	1/mo	1	all the time (5)	-
	3/yr	5	(4)	-
	2/yr	2 or	(3)	1
	1/yr	4	(2)	3
			(1.5)	2
	not applicable	5	almost never (1)	5
			not applicable	5
8.	2-3/wk	2	all the time (5)	1
	1/wk	1	(4)	3
	1/mo	3 or	(3)	2
	1/2mo	1	(2)	1
	1/yr	4	(1.5)	1
			almost never (1)	3
	not applicable	5		
			not applicable	5

9. Number of discrepancies between answers in questions #7 and #8: 6

- Too much trouble to change
- Difficult to change
- Too hard to move
- People get used to it, too much work
- Hard to move, influence others when you move them
- Not convenient

TEACHER'S QUESTIONNAIRE RESULTS

1. (departmental distribution of sample)

Social Sciences	1
Music	1
Foreign Languages	3
Mathematics	1
English	5
Business	2
Home Economics	1
Driver Ed.	1
Industrial Arts	1

2. Average years at Parkway North: 2.4

3. Average years of teaching: 6.7

4. No: 13 Yes: 3

5.

	a	b	c	d	e	f	g
most significant (5)	-	2	1	-	-	-	3*
(4.5)	-	1	1	-	-	-	-
(4)	-	1	4	2	2	1	1*
(3.5)	-	-	-	-	-	-	-
(3)	2	3	3	-	2	1	1*
(2.5)	-	1	-	-	-	-	-
(2)	-	5	2	1	1	2	-
(1.5)	1	1	-	1	-	-	-
not significant at all (1)	1	1	1	1	-	1	-
negative answers	12	1	4	11	11	11	12
total	16	16	16	16	16	16	16

*teaching of others, blackboards, inappropriate furniture
**table shapes
***placement of equipment in business department

15. More: 8
Same: 8
Fewer:

16.

	Yes	No	
a.	15	1	
b.	16	-	
c.	16	-	
d.	15		Qualified Yes: 1

17.

	Yes	No	Qualified Yes
a.	13	2	1
b.	11	4	1
c.	4	10	2
d.	11	5	-
e.	10	5	1

18. Yes: 7 No: 7 Qualified Yes: 2

20.

	Preference 1st	2nd	3rd
a. library	4	3	1
b. auditorium	4	4	1
c. open classrooms	6	2	1
d. commons	1	2	-
e. encl. classrooms	2	-	3
other*	1	1	1

*(simulator room, resource center, courtyards)

21.

	Preference 1st	2nd	3rd
a. library	-	-	-
b. auditorium	9	4	-
c. open classrooms	2	4	1
d. commons	2	3	2
other*	2	1	1

*(resource center (2), gym (2))

22. a.

excellent	(5)	8
	(4)	4
	(3.5)	1
	(3)	1
	(2)	1
poor	(1)	1

Average: 4.1

b.

excellent	(5)	10
	(4)	3
	(3)	2
	(2)	1
poor	(1)	-

Average: 4.4

10.	5-6/day	2	all the time (5)	3
	2/day	2	(4.5)	2
	1/day	2	(4)	-
	3/wk	1	(3.5)	2
	1-2/wk	1	(3)	1
	2/mo	1	(2.5)	-
	1/mo	1	(2)	3
	1/2 mo	1	(1.5)	-
	1/yr	3	almost never (1)	
	NA	2	NA	2
11.	6/day	1	all the time (5)	3
	3-4/day	1	(4.5)	1
	2/day	2	(4)	-
	1/day	2	(3.5)	2
	3/wk	1	(3)	4
	1-2/wk	2	(2.5)	-
	2/mo	1	(2)	2
	1/6 wk	1	(1.5)	-
	1/yr	3	almost never (1)	2
	NA	2	NA	2

12. Number of discrepancies between answers to questions #11 and #12: 4

- Laziness of students and teachers
- Too much noise (wants furniture moved less frequently)
- To change the atmosphere
- Inflexible furniture because of inflexible partitions

13. Yes: 9 No: 7

- Yes, but not significant
- Particularly at end of hour
- Can be avoided by rearranging furniture
- Can't hear at times
- Depends on the class
- Activity gets toned down so as not to bother others
- Affects complexity of tasks attempted
- Not extreme problem, but lecturers and films bother
- Doesn't happen always, depends on what's going on in your group

14.

All the time	(5)	-
	(4)	-
	(3.5)	1
	(3)	1
	(2.5)	1
	(2)	1
	(1.5)	1
Almost never	(1)	11

29.

	Yes	No	Dubious
(a) storage	10	5	1
(b) desk space	14	2	-
(c) meeting space	8	7	1
(d) relaxation	9	4	3

30. a. very effective (5) 5
(4.5) 1
(4) 1
(3) 2
(2.5) 1
(2) 3
not effective at all (1) - Average: 3.7
NA: 3

b. very effective (5) -
(4) -
(3) 1
(2.5) 2
(2) 4
(1.5) 1
not effective at all (1) 5 Average: 1.7
NA: 3

31.

		(a) lecturing	(b) discussion	(c) ind. instr.
all the time	(5)	1	1	-
	(4)	-	2	-
	(3.5)	2	-	-
	(3)	4	2	2
	(2)	4	4	4
	(1.5)	2	1	1
almost never	(1)	3	6	9

32. a. very effective (5) -
(4) 1
(3) 1
(2) 3
not effective at all (1) 5 Average: 1.8
NA: 6

b. very effective (5) 8
(4) 2
(3) -
(2) -
not effective at all (1) - Average: 4.8
NA: 6

23. most accommodating (5) 5
(4) -
(3) 4
(2) 2
not accommodating at all (1) 5 Average: 2.9

- isolated department: English (3), Math, music, Driver education, business

24. most accommodating (5) 11
(4.5) 1
(4) 2
(3) 2
(2) -
not accommodating at all (1) - Average: 4.6

- very positive centrality of library
- good position of resource center
- closeness to library excellent, good access downstairs

25.

	Preference 1st	2nd	3rd
a. own desk	7	4	1
b. teachers' lounge	-	3	2
c. classrooms	9	7	-
d. commons	-	-	2
e. library	-	-	-
elsewhere*	-	2	3

*(resource centers (2), coaches' office, walking around, at sports events)

26. excellent (5) 8
(4) 3
(3.5) 1
(3) 3
(2) 2
poor (1) - Average: 4.15

27. by walls and doors: 1
by partitions: 12
in lofts: 2
nothing: 1

28. very effective (5) 6
(4.5) 1
(4) 1
(3.5) 1
(3) 2
(2) 3
(1.5) 1
not effective at all (1) 1 Average: 3.5

38.

	(a) appearance	(b) comfort	(c) durability	(d) mobility
excellent (5)	12	7	-	6
(4.5)	1	1	-	1
(4)	2	6	7	8
(3.5)	-	-	1	-
(3)	3	2	4	1
(2.5)	-	-	1	-
(2)	-	-	2	-
poor (1)	-	-	1	-

39. (comments to question #38)

- chairs break easily (6 respondents)
- chairs uncomfortable after 1 hr.
- chairs not adequate for choral singing
- partitions fall occasionally (3)
- table edges come off (2)
- table pedestals unscrew or break (3)
- round tables induce cheating in tests
- shelving falls off
- quality of construction shoddy
- replacement chairs good (3)
- replacement chairs uncomfortable

40.

excellent	(5)	5
	(4.5)	1
	(4)	6
	(3.5)	2
	(3)	1
	(2)	2
poor	(1)	-

41. (comments to question #40)

- roof leaks (4 respondents)
- holes in the walls (2)
- partitions' burlap cannot be cleaned

42.

	Mention 1st	2nd	3rd
very exciting	12	3	-
pleasant	4	6	-
ugly	-	-	-
very institutional	-	-	-
very different	1	4	5
indifferent to it	-	-	-

other (prison-like exterior, building has tremendous amount of possibilities)

43.- building facilitates teaching methods (2)
- excellently facilitated (3)
- facilitates teaching methods for those who can adapt
- no difference

33.

	Too bright 5	4	3	2	Adequate 1	Too dim NA
(a) open classrooms	-	1	14	1	-	2
(b) encl. classrooms	-	-	13	4	-	3
(c) teach. stations	-	-	15	1	-	-
(d) teach. lounge	-	1	15	-	-	-
(e) library	-	-	15	-	-	1
(f) art	-	-	-	-	-	16
(g) music	-	-	1	-	-	15
(h) auditorium	-	-	10	2	-	4
business			1			

34. a. excellent (5) 2
(4) -
(3) -
(2.5) 1
(2) 3
poor (1) 6 Average: 2.0

NA: 4

b. excellent (5) 3
(4) -
(3) 2
(2) 2
poor (1) 4 Average: 2.65

NA: 5

35. very well (5) 5
(4) 2
(3) -
(2.5) 2
(2) 3
very poorly (1) 4 Average: 3.0

36. more: -
adequate: 8
adequate(?): 2
less: 6

37. excellent (5) -
(4) 1
(3) -
(2.5) 1
(2) 4
poor (1) 8 Average: 1.8

46. (continued)
- the combination of open and closed space is good; the building is fantastic; there are problems (leaks etc.)
- problems are not insurmountable
- I have compromised a lot because of lack of space or facilities for journalism department
- there are no problems with discipline here; worst problem in the building is the climate control; I like the outside
- can't exactly say why, but everybody seems happy here
- any minor discomforts or inconveniences are more than offset by positive qualities of the building

43. (continued)
- relaxed atmosphere (2)
- more openness and freedom
- doesn't change ideas, but affects approach
- had to change a lot of methods; feels good about it
- forced me to deal with open space
- building influences teaching; most people happy about it
- it would if it were used the proper way
- no comment

44.- building facilitates interaction (2)
- positive effect on interaction patterns (2)
- very good (2)
- people must adapt to building; once they do then the building poorly facilitates it
- definite reinforcement of the interaction patterns
- no effect
- a happier environment
- relaxed feeling helps interaction, affects participation
- good interaction patterns between departments
- kids like the open space
- building has an effect on students' relaxed attitude
- openness makes a difference
- too many people for communication to exist

45.- I love it (2)
- I prefer this school to any other I've seen (2)
- building is not significant, but administration and staff are key elements of satisfaction
- don't know where I'd go better from here (2)
- I would prefer to stay here
- I don't want to teach any place else (2)
- I'd rather teach in this type of school, but I'm not sure about the building
- I find it difficult to teach here
- I like it here; I wouldn't want to go to closed classrooms (2)

46.- very positive about open space; specific gripes about equipment, closed windows, etc.; and very negative about exterior appearance
- building and methods good; administration excellent
- use of color very effective
- the facility is irrelevant to open space education as I know it ... but people are
- the exposure to others made one uncomfortable in the beginning; but there has been no supervision

appendix B

Student's Questionnaire and Results

PARKWAY NORTH SENIOR USER EVALUATION STUDY -- STUDENT'S QUESTIONNAIRE

This questionnaire is part of a study to learn how well satisfied the occupants of this school are with their building. Its aim is to use the information obtained through the study as a guide to future changes in this building and in the planning of other schools. Thank you for your cooperation.

1. Please rate this building for providing places for the following activities, on a scale from 5 (excellent) to 1 (poor).

Excellent Poor

(a) Places where one can be alone

(b) Places where one can study

(c) Places where one can talk with other people

(d) Places where a lot of people can gather

(e) Places where one can relax and pass time

2. Which of the following places in this building do you prefer to use when you want to be by yourself? Please rank them in order of preference.

(a) ____ the commons
(b) ____ the library
(c) ____ the courtyards
(d) ____ the staircases
(e) ____ the resource areas in various departments (if one in particular, please specify: _____)
(f) ____ the lofts
(g) ____ other (please specify: _____)

3. Which of the following places in this building do you prefer to use when you want to study? Please rank them in order of preference.

(a) ____ the commons
(b) ____ the library
(c) ____ the courtyards
(d) ____ the staircases
(e) ____ the resource areas in various departments (if one in particular, please specify: _____)
(f) ____ the classrooms
(g) ____ the lofts
(h) ____ other (please specify: _____)

4. Which place in this building do you prefer to use when you want to be with other people? Please rank them in order of preference.

(a) ____ the commons
(b) ____ the library
(c) ____ the courtyards
(d) ____ the staircases
(e) ____ the classrooms
(f) ____ the lofts
(g) ____ other (please specify: _____)

10. Do you think that the position and arrangement of the counseling center give you the privacy you want when you talk with somebody else?

YES _____ NO _____

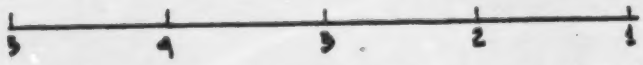
11. Is there a place in this building that you would call "your own"?

YES _____ NO _____

12. If your answer to the above question was yes, which is that space (or spaces)?

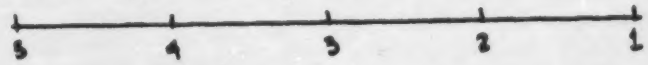
13. How exciting do you think this building is?

Very exciting Very dull



14. How formal and institutional do you think this building is?

Very informal Very formal and institutional



STUDENTS' QUESTIONNAIRE RESULTS

1.	a.	excellent (5)	9%		
		(4.5)	1%		
		(4)	27.5%		
		(3.5)	2.5%		
		(3)	26.5%		
		(2.5)	1.5%		
		(2)	23%		
		(1.5)	-		
		poor (1)	9%	Average:	3.0
	b.	excellent (5)	16%		
		(4.5)	1.5%		
		(4)	42.5%		
		(3.5)	.5%		
		(3)	33%		
		(2.5)	.5%		
		(2)	2.5%		
		(1.5)	-		
		poor (1)	4.5%	Average:	3.65
	c.	excellent (5)	69%		
		(4.5)	3.5%		
		(4)	20%		
		(3.5)	.5%		
		(3)	2.5%		
		(2.5)	-		
		(2)	1.75%		
		(1.5)	-		
		poor (1)	1.75%	Average:	4.6
	d.	excellent (5)	64.5%		
		(4.5)	2.5%		
		(4)	19%		
		(3.5)	1.5%		
		(3)	5.5%		
		(2.5)	-		
		(2)	3.5%		
		(1.5)	-		
		poor (1)	3.5%	Average:	4.4
	e.	excellent (5)	59.5%		
		(4.5)	2.5%		
		(4)	23%		
		(3.5)	.5%		
		(3)	8.5%		
		(2.5)	-		
		(2)	2.5%		
		(1.5)	-		
		poor (1)	3.5%	Average:	4.35

2.†

	Preference 1st	2nd	3rd
(a) commons	6%	10.5%	11.5%
(b) library	30%	13%	22%
(c) courtyards	24%	16%	8%
(d) staircases	10%	15%	18%
(e) resource areas	2.5%	15%	10.5%
(f) lofts	19.5%	18%	21%
other*	7%		

(seminar rooms, smoking lounge, locker area)

3.†

	Preference 1st	2nd	3rd
(a) commons	9%	10.5%	9%
(b) library	53%	20.5%	9%
(c) courtyards	2.5%	10.5%	9%
(d) staircases	2.5%	5.5%	6%
(e) resource areas	4%	13%	19.5%
(f) classrooms	10.5%	17.5%	22%
(g) lofts	17%	10.5%	17%
other*	7%		

(smoking lounge, locker areas, home)

4.†

	Preference 1st	2nd	3rd
(a) commons	68%	17%	3.5%
(b) library	14%	39%	22%
(c) courtyards	7%	25.5%	20.5%
(d) staircases	2.5%	.5%	5.5%
(e) classrooms	4.5%	4.5%	27.5%
(f) lofts	.5%	1.5%	12.5%
other (smoking lounge)	5.5%		

5. a.

almost always	(5)	9%
	(4.5)	1%
	(4)	22%
	(3.5)	1.5%
	(3)	34%
	(2.5)	1.5%
	(2)	24%
	(1.5)	1.5%
almost never	(1)	5.5%

Average: 3.0

b.

almost always	(5)	6%
	(4.5)	-
	(4)	12.5%
	(3.5)	2.5%
	(3)	37.5%
	(2.5)	1%
	(2)	28.5%
	(1.5)	1.5%
almost never	(1)	10.5%

Average: 2.75

†percentages do not add up to 100% because of double preferences or omissions.

c. almost always (5) 4.5%
(4.5) -
(4) 15%
(3.5) .5%
(3) 15%
(2.5) .5%
(2) 34.5%
(1.5) 1.5%
almost never (1) 28.5% Average: 2.3

d. almost always (5) 2.5%
(4.5) -
(4) 8%
(3.5) .5%
(3) 20.5%
(2.5) .5%
(2) 42.5%
(1.5) 3.5%
almost never (1) 22% Average: 2.2

e. (other reasons)
- noise from other classes, bored, heat in building, bad teacher, not getting along with teacher and students, teacher not talking loud enough.

6. extremely easy (5) 5%
(4.5) -
(4) 29.5%
(3.5) 10%
(3) 36.5%
(2.5) 2.5%
(2) 15%
(1.5) 1%
extremely difficult (1) 8% Average: 3.0

7.

	1st preference
(a) lofts	23.5%
(b) same level and partitions	59%
(c) different room	17.5%

8. a. excellent (5) 53%
(4.5) 4.5%
(4) 31%
(3.5) 1.5%
(3) 10%
(2) -
poor (1) - Average: 4.45

b. excellent (5) 41.5%
(4.5) 2.5%
(4) 43%
(3.5) 3.5%
(3) 8%
(2) 1.5%
poor (1) - Average: 4.3

c. excellent (5) 18.5%
(4.5) 3.5%
(4) 41%
(3.5) 3.5%
(3) 24%
(2) 6%
poor (1) 3.5% Average: 3.7

d. excellent (5) 48%
(4.5) 4.5%
(4) 34.5%
(3.5) .5%
(3) 9%
(2) 2.5%
poor (1) 1%

9. extremely easy (5) 43.5%
(4.5) .5%
(4) 42%
(3.5) 1.5%
(3) 11.5%
(2.5) .5%
(2) -
extremely difficult (1) .5%

10. Yes: 74.5% No: 24% Sometimes: 1.5%

11. Yes: 29% No: 70% No answer: 1%

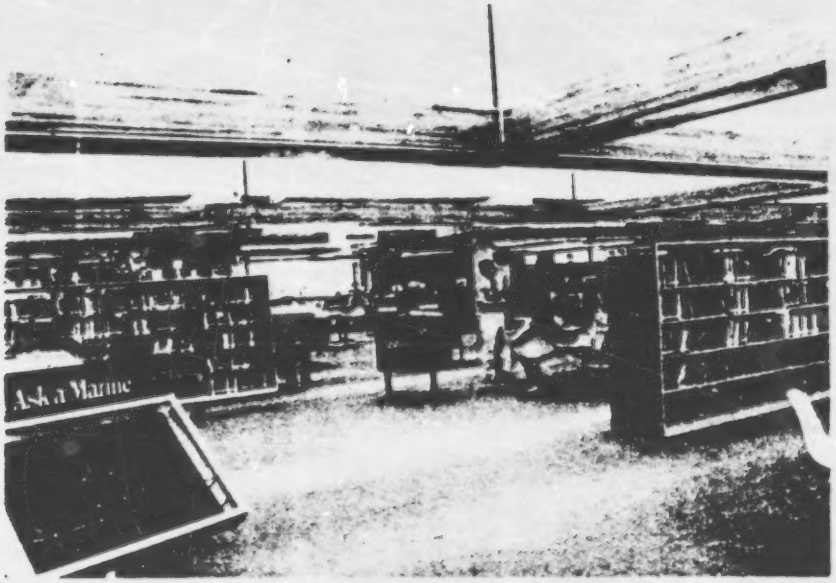
12. stairwells: 9 respondents
locker area: 6 "
commons: 5 "
lofts: 5 "
library: 5 "
theater: 2 "
other: 5 "

13. very exciting (5) 26%
(4.5) 2.5%
(4) 34%
(3.5) 2.5%
(3) 19.5%
(2.5) 2%
(2) 8%
(1.5) 1%
very dull (1) 4.5% Average: 3.7

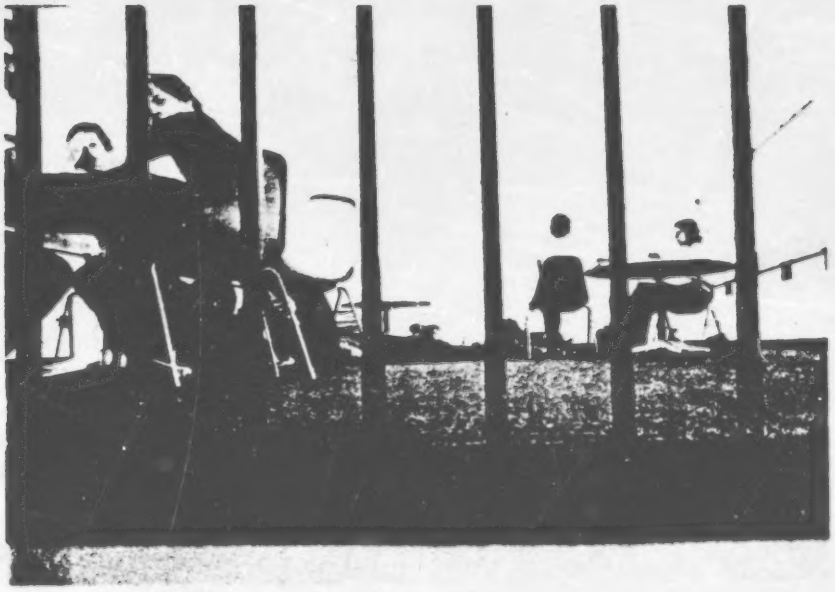
14.	very informal	(5)	14%	
		(4.5)	2%	
		(4)	46.5%	
		(3.5)	4.5%	
		(3)	29.5%	
		(2.5)	1%	
		(2)	1.5%	
		(1.5)	-	
	very formal and institutional	(1)	1%	Average: 3.75

appendix C

Photographs



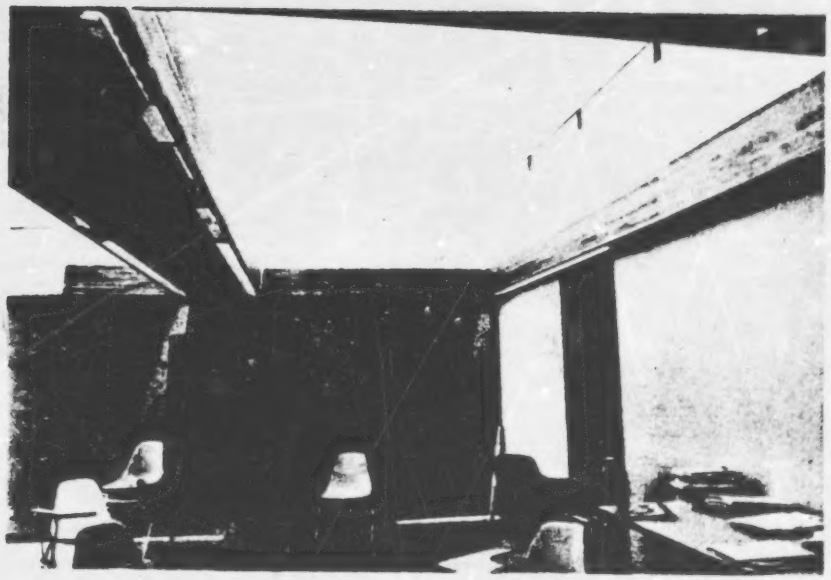
-View of the library



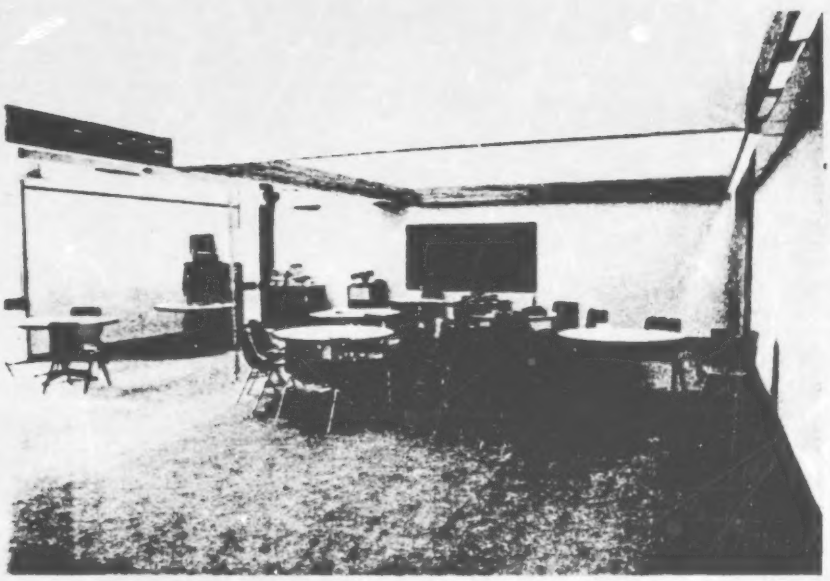
-Student-occupied loft in the library

-The Guidance Center on the lower level

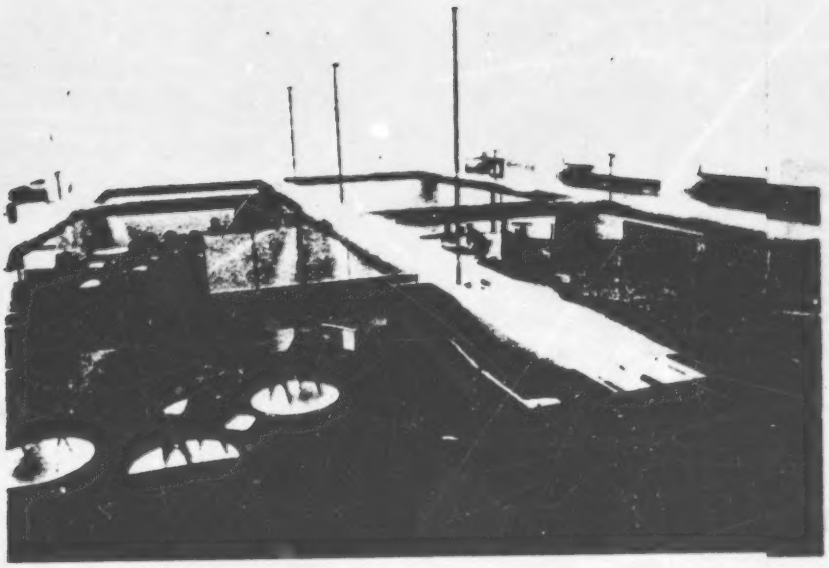
-The Social Studies Resources Center



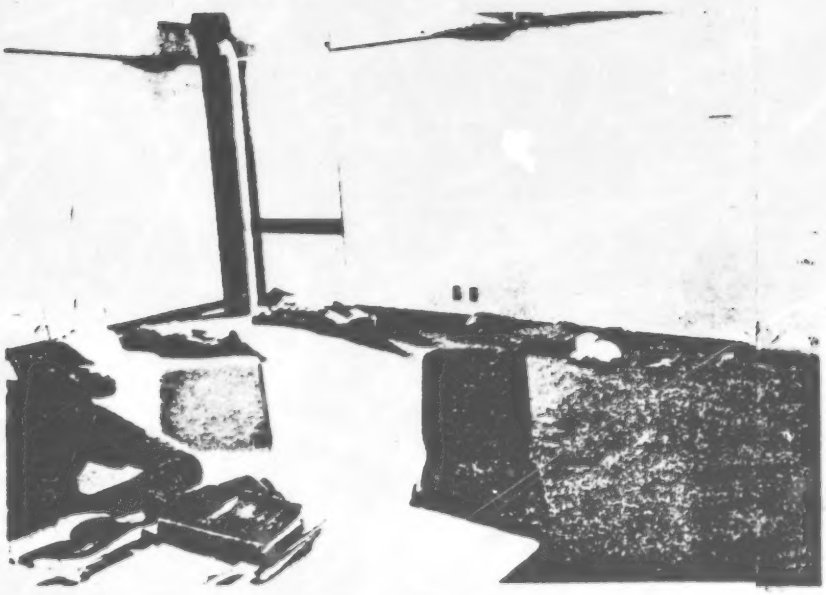
-An enclosed classroom in the Social Studies area



-The newly enclosed classroom in the English Department

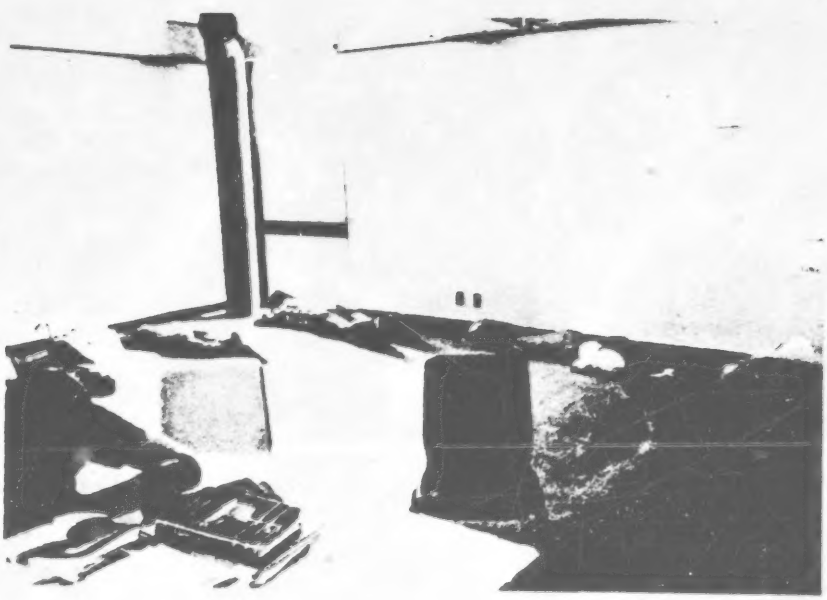


-View of an open classroom

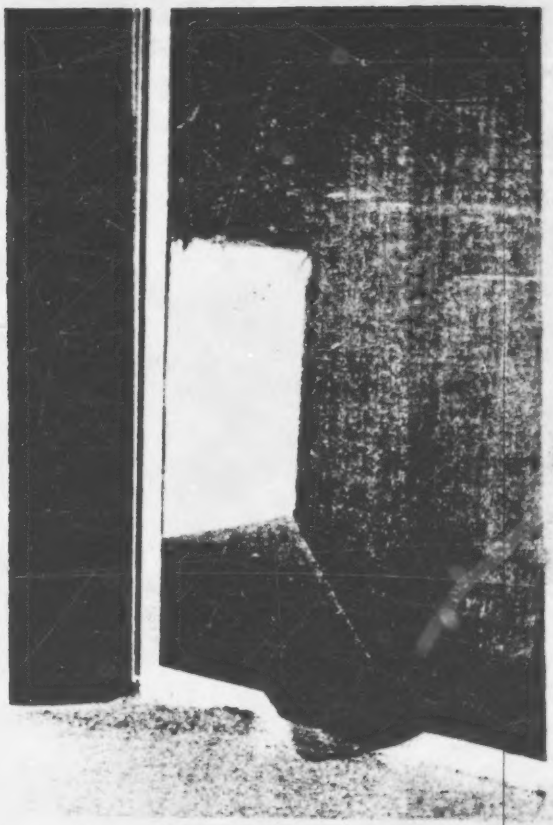


-Students resting during lunch time

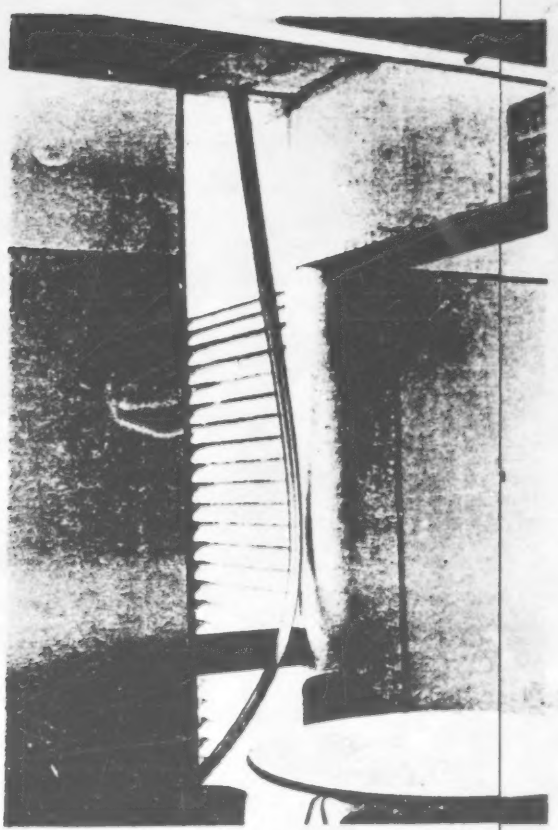
-View of an open classroom



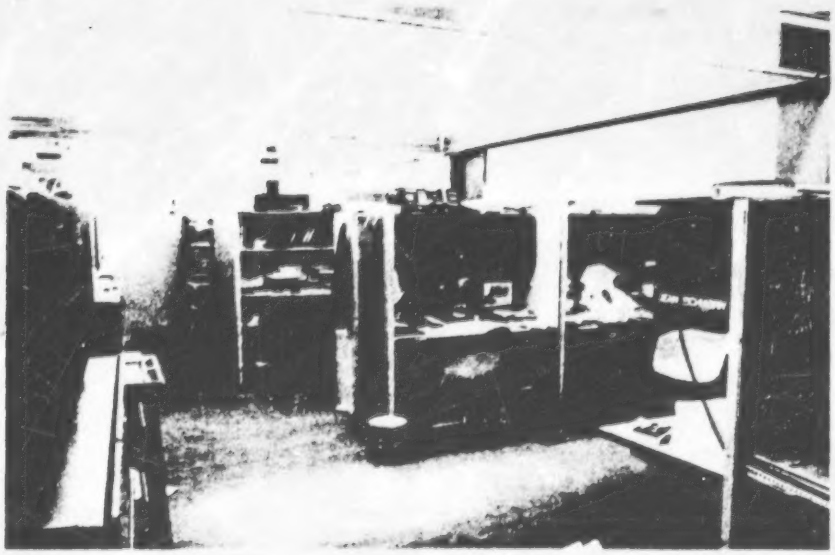
-Students resting during lunch time



-A partition with torn burlap cover



-Example of a broken window blind



-The teacher's station in the English Department

appendix D

Excerpts from the Architects Design Objectives Booklet

THIS BUILDING THEN MUST PROVIDE FLEXIBILITY, SERVICEABILITY, PEOPLE MOVEMENT, COMFORT & BEAUTY TO ALLOW SOME OR ALL OF THE FOLLOWING.---

A variety of group sizes from one to hundreds

A variety of time allocations appropriate to the learning and learner

Special needs for highly specialized learning such as laboratories and shops

Multimedia as a means to enhance learning

Multioptional ways to learn provided in both central and satellite resource centers

Places for teachers to plan

Place for teachers and aides to prepare instructional materials

Consideration of teaching as a team processes utilizing teacher differences

Rely heavily on student feed back in the teaching and administration processes

Enhance the flowing together of students, teachers, and disciplines

Provide the means for providing "real world" vocational experiences

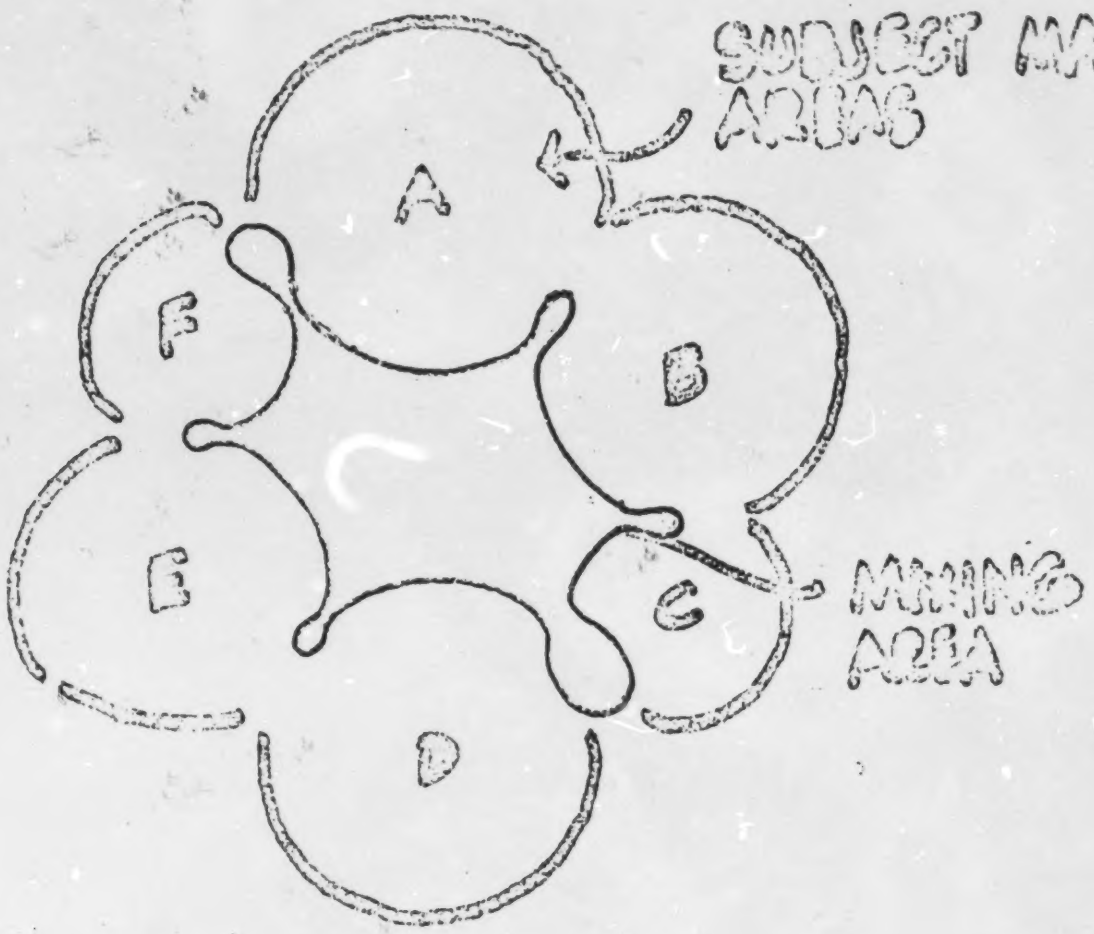
The ability to change space size and function

Allow for the school to operate on an extended day basis and this includes more of the community

Year-round use of the school

LEARNING IS CENTRAL
ALL ELSE ENHANCES LEARNING.

OVERALL ORGANIZATIONAL ID



SUBJECT MATTER AREAS RELATED TOGETHER THRU MIXING ZONE.

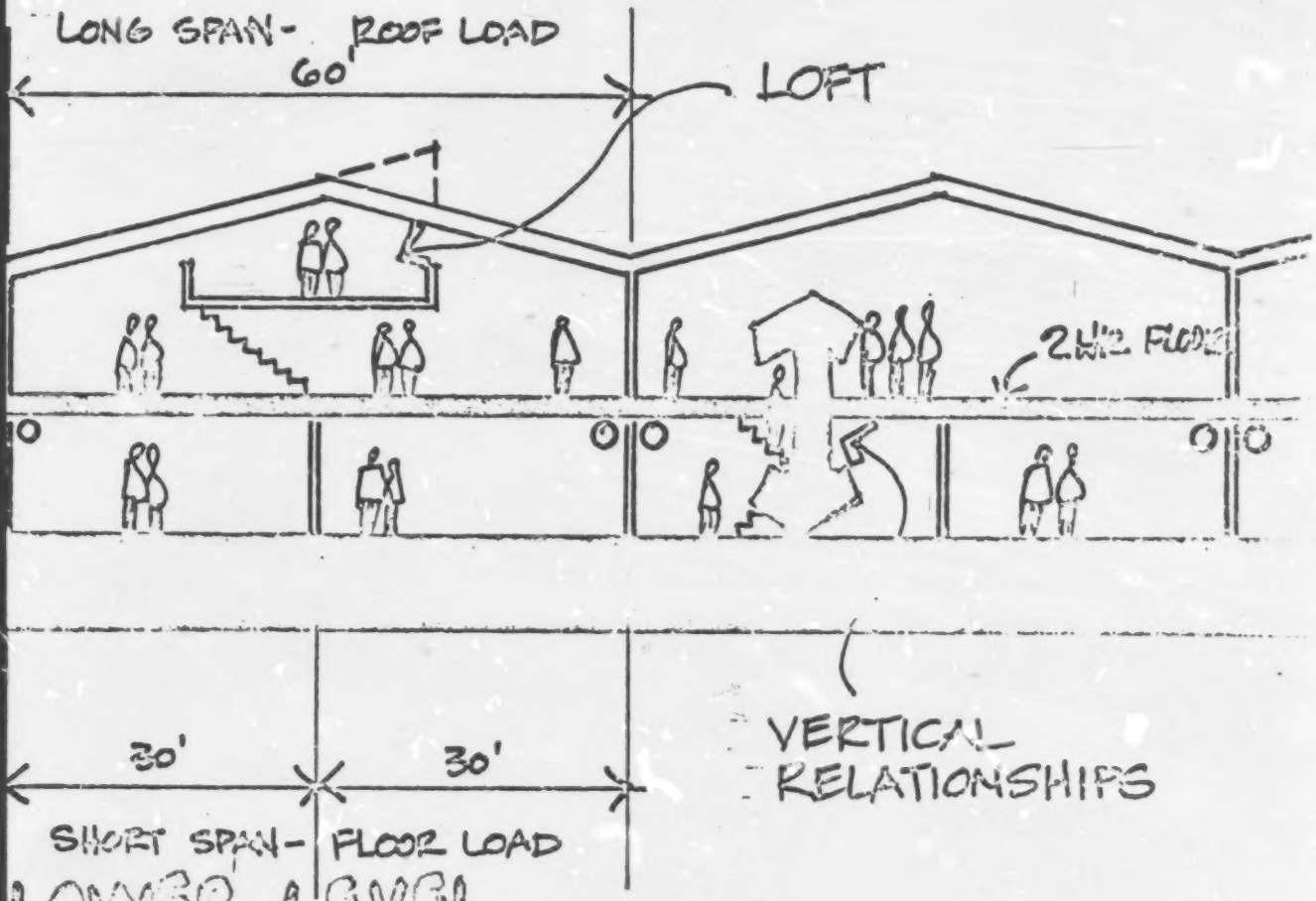
MAXIMIZE THE ABILITY FOR THESE AREAS TO RELATE.

"IDEALY, EVERYTHING RELATES TO EVERYTHIN ELSE."

UTILIZING TWO LEVELS

UPPER LEVEL

50% OF BUILDING LONG SPAN (60'-0"). COST IS REDUCED BY SPANNING ROOF RATHER THAN FLOOR. ROOF LOAD = 30# pa S/F. - FLOOR LOAD = 100# pa S/F. TRUSS (ARCH) STRUCTURALLY ECONOMICAL.



LOWER LEVEL

SHORT SPAN FLOOR LOAD. FIXED FACILITIES ON THIS LEVEL. ECONOMICAL SHORT SPAN FOR INCREASED FLOOR LOADING. CONCRETE FOR FIRE RATING.

SUBJECT MATTER RELATIONSHIP

- A WAY TO INCREASE THE POSSIBILITY OF CROSS-DISCIPLINE PROGRAMS
- A WAY FOR LEARNING TO BE UNIFIED
- A WAY FOR TEACHING TO BE INTERACTIVE

THE MULTI-FUNCTIONING SPACE (FLEXIBILITY)